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Weed's Malt and Grain Dryer.

Figure 1.

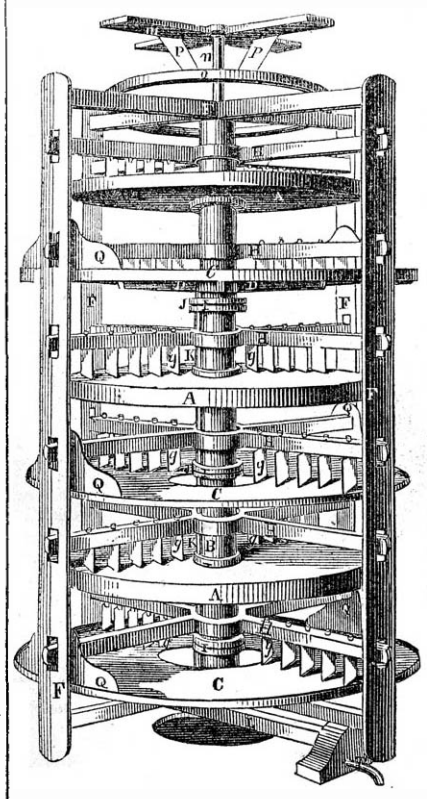
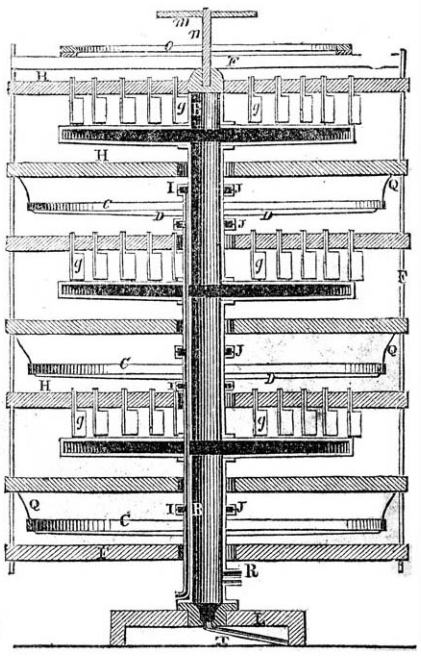


Figure 2.

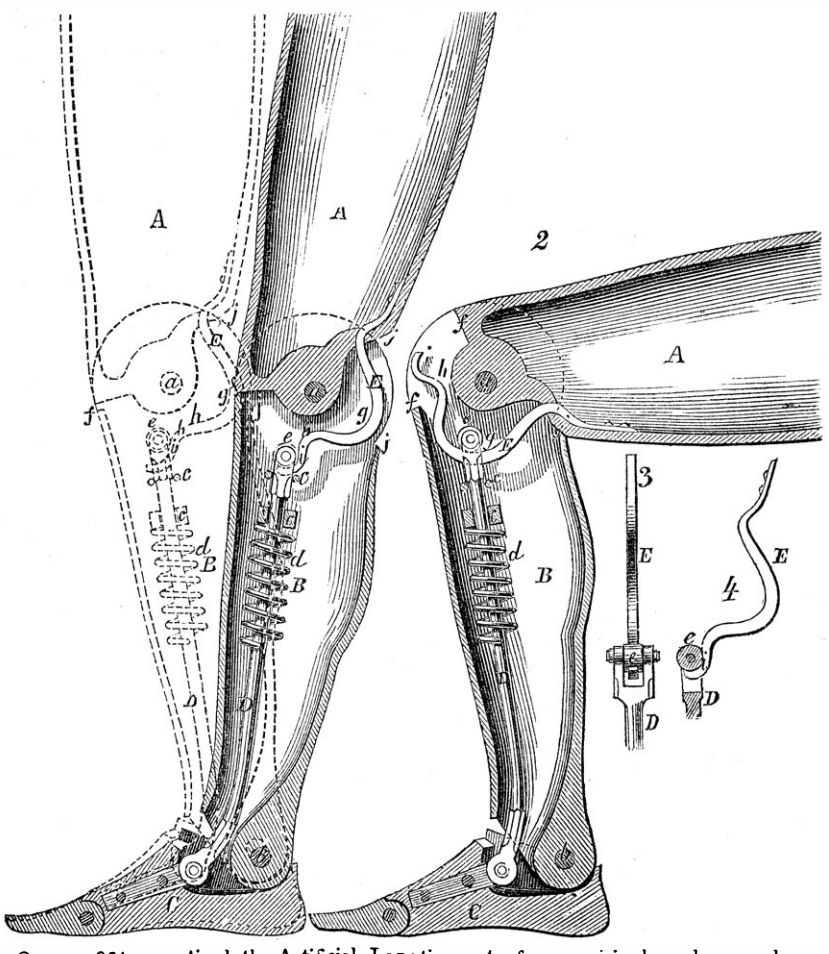


The annexed engravings are views of an apparatus, for drying malt, grain, &c., for which a patent was granted to T. E. Weed, of Williamsburgh, L. I., February 24th, last year.—As it is expected that more grain will be exported this winter than during any of the past five years, a good grain dryer is of no small importance for the purpose of preparing grain for safe and successful preservation during voyages, or when lying in storehouses.—Figure 1 is a perspective view of the machine, and figure 2 is a vertical section. The same letters refer to like parts.

a a are circular steam chambers made of two plates of boiler iron, having steam-tight joints, and so placed as to leave a steam space of about three inches between them for steam to circulate. The top plate has a plain surface, the bottom plate inclines to the centre, to allow the condensed steam to pass down the hollow shaft, B B, and escape from the pipe, T. The shaft, B, is a pipe which extends through the centre of the apparatus; it is made in sections, and supports each of the chambers, *a a*. There are circular sheet-iron hot air pans, *c c*, supported by the arms, D, which are secured to shaft, B. These pans are larger than the steam pans or chambers, *a a*. The steam and hot air pans are arranged alternately above one another; the grain from the steam pans is scraped gradually from the centre to the circumference, then falls down on the larger hot air pans, when it is scraped to the centre, where there is an open space, then falls down on the steam pan, and so on from the top to the bottom of the series, when the grain or malt is discharged perfectly dry. F F is a frame work that revolves round.—The top part rests on the shaft, B, which is its axis. The bottom part turns on a ring on the shaft which keeps it steady; *g g* are scrapers secured on the arms, H H, of the frame, F; these scrapers revolve with the frame.—The scrapers which revolve on the steam chambers are set at such an angle as to carry the grain from the centre to the circumference; those on the hot air pans are set at a contrary angle to carry the grain to the centre; they work the grain spirally; I I are small chambers that extend around the centre shaft; J J are openings in said chambers, and extend around them; K is a pipe that has an opening into each of said chambers.—A current of hot air is forced into the pipe and passes into these chambers, and a thin stream of it flows through the openings, J J, and passes off from the centre over the surface of the grain on the pans (that is continually stirred by the scrapers) and through the grain falling from the pans at the centre; this is for the purpose of carrying off all the vapor that rises; L is an iron bar, that supports the weight of the machine; *m* is a cross secured to the floor above; the rod, *n*, which is secured to the main shaft passes into it to hold the machine in position; O is a pulley secured to the frame work for turning it; P is a feeder which conveys the grain to the machine on the top steam pan, at the centre; Q Q are guard plates on the frame, moving with it to keep the grain from falling over from pans, *c*, but these pans have elevated rims, while there are none on pans, *a*. The steam pipe to convey steam from the boiler, connects at R, with the main hollow shaft, from which it is distributed through the steam pans, *a a*. The above description will convey a clear idea of the nature, construction, and operation of this grain dryer. There are two claims in the patent; one for the main shaft, B, answering as a support and steam passage for the chambers, *a*; the other is for the arrangement of the air chambers above the pans, *c c*, for the purposes described.—There are a number of features combined in this machine to attract the notice of those interested. It can be made of any size and with any amount of surface. This machine has been thoroughly tested with every kind of grain. All grain shipped to any distance should be kiln-dried. More information may be obtained by letter addressed to E. R. Durkee, 139 Water street, this city, or to Mr. Weed, Williamsburgh, N. Y.

MARKS' ARTIFCIAL LEG.

Figure 1. Figure 2.



On page 364 we noticed the Artificial Leg of D. B. Marks, of this city, and since that time not a few enquiries have been made respecting it. The annexed engravings are views of this artificial leg, they illustrate its parts and its action in different positions.

Figure 1 shows the limb and foot in section, in two of the positions of walking; figure 2 shows the same, bent as when the wearer is in a sitting posture; figure 3 is a side view of the curved bar by which the movement of the knee joint is controlled, with a section of the head of the rod and roller which are connected with the foot; figure 4 is a front view of the same. Similar letters refer to like parts.

This limb is intended to perform in walking all the movements of the natural one. In taking a step the foot is brought flat to the ground, with a perfect rigidity of the knee joint, which is maintained until the ankle is bent by the throwing forward of the body, as the opposite leg takes the succeeding step.—This bending of the ankle leaves the knee free to make the slight bend that is necessary to raise the heel from the ground, and when the knee is thus bent, the ankle becomes stiff with the toe raised to prevent its dragging during the early portion of the movement of the leg in taking the next step, and remains stiff until it is necessary for the straightening of the knee, and the throwing down of the toe to bring the foot flat to the ground, both of which latter movements are effected simultaneously.

The invention relates to the means by which the movements of the knee and ankle joints are controlled, and the necessary rigidity is maintained during the cessation in those movements.

A B and C, (figures 1 and 2) are the thigh, leg, and foot, which may be made of any known material of sufficient strength to support the weight of the body. The leg is connected with the thigh and foot by hinge joints, *a b*, ball and socket joints, or any other connection most suitable to represent the knee and ankle joints, the thigh piece, A, and leg piece, B, being provided with stops, *f f*, which come in contact when the knee is straight, and thus prevent its knee being thrown too far back.—The thigh and leg may be made hollow,—the latter must have sufficient space within it for the passage of a rod, D, which is connected at its lower end with the foot in front of the ankle joint, *b*, which works through a guide or guides, *c c*, under one of which, or attached in some suitable way to the leg, B, a spring, *d*, coils round the rod, to which it is firmly secured. The effect of this spring is to throw down the toe or front end of the foot. The upper end of the rod is furnished with a roller, *e*, which works in contact with the face of a curved bar, E, which is rigidly attached to the thigh at the back of the knee joint *a*. The curved bar proceeds from its place of attachment for some distance in a straight line, then forms a hollow curve, *g*, on its face, next a smaller rounded curve, *h*, then for a very short distance is nearly straight, and the terminating portion forms a small arc, *i*, which fits to the periphery of the roller at the top of the rod, D.

In bending the knee the curved bar, E works under the roller, *e*, but when the leg is straightend as shown in figure 1, which represents the foot thrown forward and placed on the ground as when the step is made; the terminating curve, *i*, of the curved bar fits to the back and under parts of the roller. The back of the roller coming in contact with the bar prevents the possibility of bending the knee without raising the roller, *e*, and rod, D, and holds the stops, *f*, in contact, making the knee perfectly stiff. The extremity of the bar, E holds up the roller, *e*, against the tension of the spring, *d*, and while it allows the front of the foot to bend upwards from the ankle with a moderate pressure, holds the ankle stiff when no pressure is used, and limits its downward movement; when the upper part of the limb is moved forward, in taking the suc-

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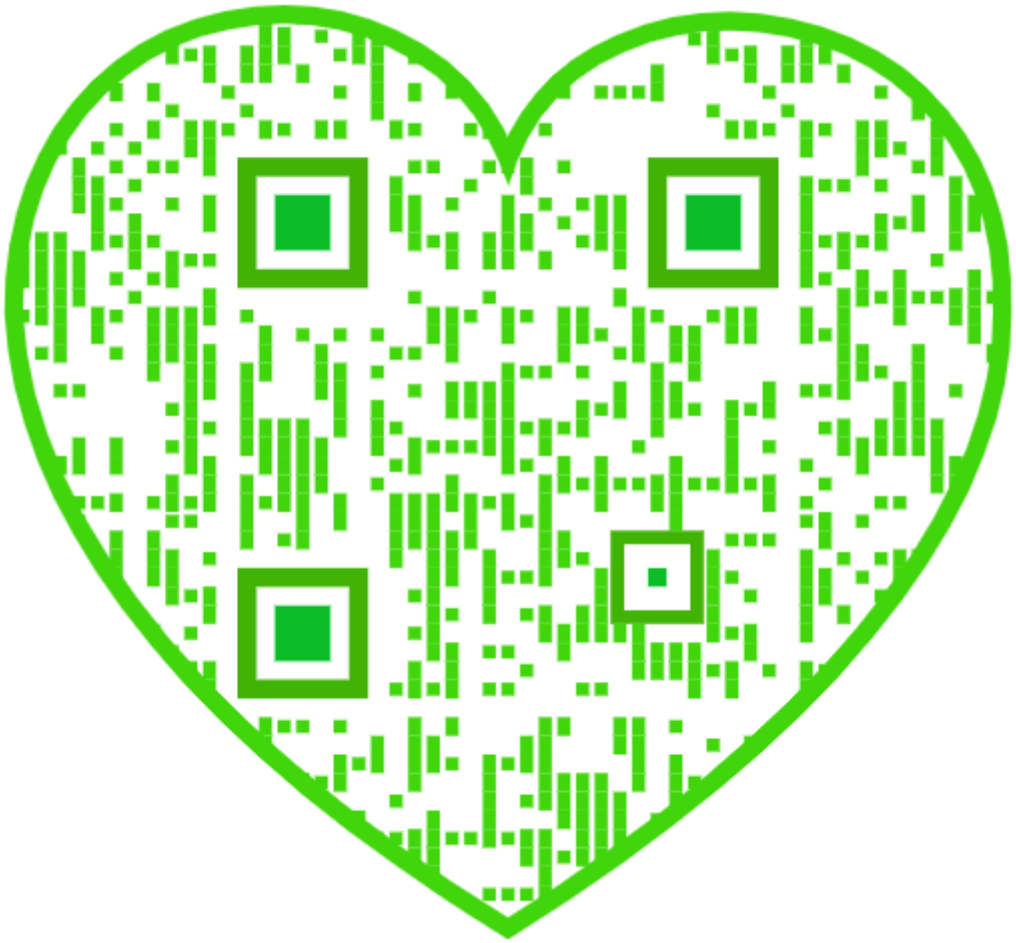

ceeding step with the opposite foot. The limb is shown in figure 1, making this movement—the ankle is the first joint where any movement is made, and the bend which there takes place, moves the rod, D, and its roller. *e*, upwards from the position where they hold the knee stiff. As the heel is raised preparatory to lifting the whole foot, the ankle is still further bent, and the rod further raised, and there is a tendency to bend at the knee; this tendency is allowed to operate, and the roller, *e*, moves up the rounded curve, *h*, of the curved bar, until it reaches a position where it will rest, which will be about the position indicated by dotted circles in figure 1. By stopping in that position, the roller and rod keep the toe raised and the knee slightly bent during the early portion of the next step, but as the foot reaches the end of its forward movement the lower part of the limb, acquires such momentum that when the forward movement from the thigh ceases, the knee is straightened by its continued motion, and the roller, *e*, descending the curve, *h*, throws down the toe and arrives at the hollow curve, *i*, where it again locks the knee stiff with the foot in position to be brought flat or nearly so upon the ground.

To bend the knee for sitting down, the weight requires to be thrown upon the front of the foot, and the ankle bent enough to raise the roller, *e*, high enough to run over the rounded curve, *h*, when no further obstacle to the bending is encountered, until it is bent as far as necessary, when the back stops, *j j*, of the leg and thigh meet; the roller following the hollow curve, *g*, and thereby descending far enough to allow the foot to come down flat. No obstacle is offered to the straightening of the leg again, but that of the spring, *d*, during the early part of the movement, which will be easily overcome by placing the foot flat on the ground and raising the body.

In the Crystal Palace the only two artificial legs on exhibition at present are Selpho's Anglesey Leg, and the famous one of Palmer, manufactured in Springfield, Mass. This latter leg was awarded a Council Medal at the World's Fair in 1851, and no less than fifteen bronze, silver, and gold medals have been awarded to it at various times, by different institutions. More information about the above illustrated leg may be obtained by letter addressed to D. B. Marks, care of A. A. Marks, 198 West 37th st., this city.

THE CRYSTAL PALACE

General Remarks.—During the past week many additions of an attractive and useful character have been made to both the building and its contents. A ship from Leghorn came into this port on last Tuesday, with no less than 172 cases for exhibition, and many more from other parts of the world, are yet to arrive. We must give our French cousins the greatest credit for having their department arranged in the neatest manner, and in the most advanced state. Our English cousins are the farthest behind in arrangement and decoration, indeed, Uncle John must get up some *high pressure* before he can *steam up* to be alongside of any department in the building. As it regards neatness, the British department does not at all compare yet with any other—a radical reform is wanted, and we hope the British Commissioners will push matters along with more spirit, and taste, next week. The Belgian Department is very good, and in many manufactures, such as *velvets*, we have been delightfully surprised; there is a display nearly rivaling that of the French Department. Austria, "this *patch* on the surface of the earth," has shown herself in every branch of the fine and useful arts, to have attained a high position in producing something more than *patch work*.

The American Department has advanced nobly during the past week. In both the useful and ornamental arts, our countrymen are going to do more than we expected. Our brethren from other lands, we are confident, will go away with a very high opinion of the taste, genius, and skill of the people within the borders of our land. That eminent chemist, Justus Liebig, in his "Letters on Chemistry," page 130, says, "the quantity of soap consumed by a nation would be no inaccurate measure whereby to estimate its wealth and civilization." By this measure we justly could claim, we believe, for the United States, the title of the most wealthy and civilized nation in the world. Pillars of soap, busts of soap, windows of soap, soap of all colors, in all shapes, in all sizes, and of all smells, mark the vast extent of our soap manufacture. We are no doubt the best washed people in all creation. Some people may think we are somewhat quizzical in our remarks, owing to the equivocal use of the word soap, such as *soft-soaping*, for flattery, &c., but we assure them we are sincere and mean to be understood as having assumed for our standard of civilization and wealth, the quantity of soap consumed by the people.

Fire Arms.—In the United States Department the array of fire-arms is extensive and brilliant, and supports the high character for which our countrymen have long been distinguished in this branch of the mechanic arts. There are arms from the United States arsenals, which are no discredit to the gunneries of these establishments. Visitors will find them on the right-hand side of the North nave next to the aisle. Porter's rifle, Jenning's, Marston's, Sharp's, &c., are all on display. Of Colt's revolvers there is a fine case, and there is also a fine case of Whitney's revolvers. Close to the Amazon Group, of Kiss, in the British Department, there is a curious display of old fire-arms, arranged on one of the pillars, and very conspicuous. Those who are interested in fire-arms, and who would desire to study the progress made in their manufacture, would do well to examine this collection first, then some cases, behind them, from London, then the Belgian collection on the West side of the South aisle, and afterwards cross over and examine the American collection. The great improvements which have been made, are due to superior mechanical skill, excepting the application of detonating powder and the percussion lock, as superior substitutes for the old match and flint locks. There are old muskets and pistols from the Tower of London, with a stack of barrels and charge-chamber to match,—an invention supposed to be quite new in our country a few years ago, and respecting which Uncle Sam, at one time, was made the subject of an adroit swindle. We cannot tell at present how much money the government paid at one time for a lot of *stack* or many-barrelled muskets, but we know the sum was not small, something over $100,000. We saw some stacks of these fire-arms sold for old iron, in 1849. It was always supposed by us, and the majority of our countrymen, that a pistol, with a revolving charge-chamber, like Colt's, was an invention of only a few years old, but this is not so. There is a pistol from the same quarter as the *stack* barrelled musket, as old as 1617, with a revolving chamber containing six charge recesses. This is the pistol which was obtained from the British Government by Col. Colt, to explain the difference between his invention and it, before the Society of Civil Engineers. The charge-chamber of Colt's revolver, is moved by the trigger, this old-fashioned one is turned on an axis by hand, and held by a catch for each shot to be discharged.

There are some of the drollest kinds of arms in this old curiosity-shop. The butts of some of the old muskets look like the hubs of the wheels of a donkey cart. There are old double-handed swords, like that of "Cœur de Leon," single rapiers, halberts; bill-hooks of the old English Archer days, and many other quaint pieces of armor, all worth attention.

Machine Room.—When this room is complete, and all the machines to be exhibited are whirling along in all the graceful attitudes so captivating to the enthusiastic mechanician we shall see something worth being proud of, and pleased with. There will be a single line of shafting 450 feet long, and straight as an arrow. The largest metal cutting shears in the world are now being fitted up; two large horizontal engines from Lawrence, Mass., working on one shaft, are now being put up for driving the machinery; a large beam engine from Providence R. I., will soon be put up for a driving engine also.—The boilers to supply the driving engines, are erected on the other side of the street, north of the building, and entirely separate from it. No less than five large steam boilers have been provided, and the steam is conveyed under ground across the street. Plenty of steam power is thus provided for all the machines large and small, which will be exhibited.—We also expect to see some fine locomotives on exhibition and trial for a short period; this will afford us much gratification. It will be the month of September, we believe, before the machinery will be all in operation; the work to be done cannot and will not be slighted. The Superintendent, Mr. Holmes, is pushing matters as fast, as discreetly, and effectively as he can.

Paying Dear for a Puff.

"Putnam's Magazine," for August, has a laudatory notice of the New York Crystal Palace, which is certainly well written and very interesting, to say the least. We have no time to allude to it farther than to declare that we understand three hundred dollars was paid for the insertion of this notice.—Such a curious proceeding may be all right, for aught we know; but it certainly smacks of a fearful doubt, on the part of the management, of the ultimate popularity of the exhibition. We do not like these paid puffs, at all. The exhibition itself, when it is ready, will be a handsome one, and creditable to the country, though it will, doubtless, be a dear show for the poor stockholders. It is nonsense, then, to expect eclat by paying magazine publishers for fulsome notices.

[The above we copy from the "Brother Jonathan" newspaper, of August 6th. We can scarcely believe that the Treasurer of the Crystal Palace Association would dare pay such an enormous bill for puffing, even if the bill came to him properly audited by the directors. If in addition to special privileges already granted to Mr. Putnam by the Association, he is permitted to draw $300 a month for "puffs" inserted in his Magazine, we think he will be likely to make more out of the concern than the stock-jobbers—the Wall-street clique.

It seems to us that considerable strife must exist between Putnam and the stockholders, and that Putnam has the best of it—for while Putnam's "puffs" have gone sensibly up, the price of shares has gone sensibly down. Since the Crystal Palace was inaugurated the stock has depreciated, in this market, twenty-eight per cent.; but the falling off cannot be owing to the Exhibition not being as good as was anticipated, for we believe the display of contributions far exceeds the expectation of those whose interests and hopes were the greatest; and the number of visiters are as many as could have been expected at this season of the year, therefore we infer that too much must be paid for "puffs" and advertisements, or else there is a greater leak out of the receipts to liquidate other expenses than was anticipated. The Exhibition is creditable to the exhibitors, but the direction has been miserably conducted from the first.

Curves on Railroads.

What is the reason that so many of our railroads are constructed with such a quantity of curves—short and long—the short ones being the most numerous? In looking along the tracks of many of our railroads, they appear to have been constructed on the lines which a greyhound describes in chasing a rabbit,—there is such a doubling and tripling of curves to be seen, that a person, if ignorant of engineering must form but a very sorry opinion of the abilities of those who laid out the tracks. Numerous curves increase the liability to accidents, and certain expense in every sense of the term. We have noticed curves on some roads as if they were made for the very purpose of obviating a straight, safe, and cheap line. This should not be; all our railroads should be constructed, when possible, on a bee-line.

Interesting to Glove Manufacturers and Dealers

A Paris letter of July 5th, says: A complete revolution is about taking place in the manufacture of gloves. Two inhabitants of Grenoble invented about the same time a machine for sewing gloves, but instead of competing with each other, they agreed to unite the advantages of each invention. One found means to sew mechanically the fingers of gloves, while the other, after sewing the remainder of the glove, was compelled to employ operatives to sew the fingers. The inventors, by combining the two machines, have produced one which sews gloves perfectly. This discovery has produced a great sensation at Grenoble, where the manufacturers were not able to supply the demand for want of a sufficient number of operatives.—[Ex.

[Our American Sewing Machines can sew gloves as well as other articles.

Events of the Week.

War and its Effects on Trade.—We have seen it stated in a number of our exchanges, that if a war was to break out in Europe, it would prove disastrous to the American trade. We quote the following from one of our dailies:—

"An European war would be accompanied by injuries to our trade, of a general and lasting nature. In the first place, cotton would receive a severe blow; and all those concerned in the growth or traffic of the staple would suffer heavy loss. Our Mediterranean trade would be crippled. The panic which would reign on the London 'Change and the Paris Bourse, would react upon us. Money would rise in price, and financial operations would be straightened. English and French merchants, compelled to curtail their dealings, would buy less of us than they now do. Increased taxation—the necessary accompaniments of war—would have a very injurious effect on the manufacturing districts, and we should be compelled to pay more for the manufactured articles which we now import from England."

How could any man of common information come to such conclusions? How could cotton receive a severe blow by war. England could manufacture as much as ever; the Mediterranean would still be open to her ships. There might be some confusion for a little time, but the fact is, that a war in Europe would compel both French and English, unless they were opposed to one another, to buy more of us than they now do.

English and American Clipper Ships.

The English clipper-ship "Australia," recently returned to Liverpool after a quick run, and in portions of her log, which were published, the statement was made that the "Australia" had passed at different periods of her voyage the American clippers "Flying Cloud," "White Squall," and "Atalanta." Lieutenant Maury, whose attention was called to this statement, examined into the matter, and from a comparison of the logs of these vessels conclusively shows that at the time the "Australia" is said to have passed the "White Squall," that vessel was one hundred miles distant, laying to, for the repair of damages to spars, and that at the time the "Flying Cloud" is said to have been passed she was two thousand miles distant from the "Australia." He therefore concludes that it was some other ships, and not the two American clippers, that the "Australia" "passed with ease." In regard to the "Atalanta," Lieut. Maury could say nothing, as he was not furnished with an abstract of her log.

Porter's Rifle.

Some of the southern papers state that Col. Porter, the inventor of the Porter fire-arm, has sold one-half of his patent to Governor J. C. Jones, of Tennessee, for $70,000. This falls just $100,000 short of the truth—he sold one-half for $170,000.—[Washington Union.

Col. Porter may consider himself a fortunate man. Inventors sometimes do strike a gold vein, a large number of them to our knowledge have become quite wealthy. There are good prospects yet in store for inventors, we believe.

Chief Engineer.

We understan that Charles W. Copeland, of this city, was offered the office of Chief Engineer, U. S. N., but was obliged to decline on account of other pressing engagements.—He would have filled the situation with distinguished ability.

The body of one of the men who went over the Niagara Falls has been recovered; it was fearfully mangled.

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On the Manufacture of Cast-Steel, by Dr. Karsten.

Any information connected with the manufacture of steel is of great importance to a large class of manufacturers and operatives in America.

Chemistry had already been established upon a scientific basis by the adoption of the doctrine of definite proportions at the time when attention was again directed to the compounds of iron with carbon. With regard to these substances, so impoortant in the arts, the law of definite combining proportions did not appear to hold good; but the per centage of carbon was greater in proportion as the carboniferous iron approximated more closely to steel, and from this to cast-iron. However, there still remained a possibility of reconciling this fact, with the law, by assuming the existence of a definite carburet of iron capable of combining with iron in definite or indefinite proportions, and determining its characters. Still the existence of such a carburet of iron has never yet been proved. In the course of a former investigation of this subject, I was of opinion that I had really obtained such a substance. But the evidence of subsequent experience is entirely the other way; and even if such a compound were discovered, the difficulty would not be removed, for it would still be necessary to admit that it combined in indefinite proportions with iron. It would appear as if the combination of iron with carbon in indefinite proportions does not exceed a certain limit, and that the maximum per centage of carbon is about 5·93.

The classification of the various kinds of carburetted iron, under the general name of cast-iron, steel, and bar iron, is entirely arbitrary, and based upon the physical characters. When entirely free from carbon, iron is so soft that it offers but little resistance to friction, and would be inapplicable to most of the purposes for which iron with more or less of carbon is employed. By combination with carbon within certain limits, it acquires greater hardness; the elasticity and ductility are increased. The increased hardness is especially remarkable when the strongly-heated metal is suddenly cooled. This character of some carburetted iron has been made the distinction between bar iron and steel, inasmuch as all bar iron which becomes harder when suddenly cooled, is by universal consent termed steel. The analyses of a great number of varieties of iron has led to the result that the per centage of carbon may rise to 0.2, or 0·25, before the metal becomes considerably harder when suddenly cooled. The purer the iron is, the greater its freedom from adventitious substances, especially sulphur, silicon, and phosphorus, the larger may be the per centage of carbon requisite to determine its hardening when cooled suddenly. The best kinds of Swedish bar iron and that made in Germany from spathic iron and brown iron ores, do not become very hard even when containing as much as 0·35 per cent. of carbon, although the hardness is such as to justify the appellation of steel-like iron. The transition from this kind of iron to true steel is so imperceptible, that it is necessary to adopt some arbitrary means of deciding whether the metal is bar iron or steel. It the carburetted iron acquires on sudden cooling such a degree of hardness as to give sparks when struck upon flint, it may be regarded as steel; and this degree of hardness requires a per centage of carbon amounting for the less pure kinds of iron to 0.5, and for the nearly pure iron to 0·65. However, steel containing such a small per centage of carbon is always but soft steel, which, to become capable of acquiring greater hardness, must be more highly carburetted. The hardness acquired upon sudden cooling increases as the per centage of carbon increases, but not in the same proportion. For iron almost perfectly free from adventitious substances, a per centage of 1·4 or 1·5 carbon corresponds with the highest capability of acquiring hardness and tenacity. With a still higher per centage of carbon the steel acquires greater hardness; but its tenacity is lessened and the malleability decreases so rapidly with the increase of carbon, that with a per centage of 1·75 it can scarcely be welded at all.—When the per centage of carbon amounts to 1·8, it is only with great difficulty that it can be forged, although with a very great degree of hardness it may still possess considerable tenacity. Steel which contain 1·9 per cent. and more of carbon can scarcely be forged at all, and with a per centage of 2·0 the limit between steel and pig iron appears to be reached; for such metal in the soft state, that is, before being hardened, cannot be beaten out while hot without splitting and breaking under the hammer.

Steel, in virtue of the remarkable capability which it possesses, after cooling slowly from a high temperature, of being worked like soft iron, and then acquiring a considerable increase of hardness, without loss of tenacity on subsequent sudden cooling, has become a very valuable substance for various branches of industry. However, it has not yet been possible to refer the altered conditions of hardness presented by the slowly and suddenly cooled metal to any altered state of combination of the carbon and iron in steel.—Such wide differences of hardness and softness as those presented by steel, which has been submitted to these two modes of treatment, can only be regarded as resulting from a total alteration of its molecular structure. The conjecture that the state of combination of the iron and carbon in hardened and soft steel respectively must be very different, is rendered in a high degree probable from the circumstance that such a difference in the state of combination of the iron and carbon in the carburets with a large per centage of carbon—the different kinds of pig iron—may be proved to exist with perfect certainty. A distinction has always been made between white and gray pig iron. These substances differ so obviously in their characters—color, hardness, tenacity, and brittleness—that the fact could scarcely have been overlooked. In addition to this, the difference in their conditions of fusion must not be overlooked, the gray kind requiring a much higher temperature than the white iron, and passing almost suddenly from a solid to a liquid state, while the white iron not only fuses at a lower temperature, but before liquefaction, becomes soft and then pasty. Before a trustworthy method of separating carbon from iron had been discovered, it was supposed that this difference in the behavior of white and gray kinds of iron was attributable to the per centage of carbon, for on dissolving gray iron in acids a much larger quantity of carbon is left than when white iron is treated in the same manner. Now, however, it is known that this inference was erroneous, and that the characters of pig iron are dependent, not upon the greater or less per centage of carbon, but upon the state of combination of the carbon and iron. The gray iron, when suddenly cooled after having been melted, is converted into white iron; and white iron, when exposed to a high temperature, after melting, and gradually cooled, is converted into gray iron, without the per centage either of iron or carbon being in any degree altered. Every kind of gray iron corresponds to a white iron with precisely the same per centage of carbon; and the wholly different behavior and characters of these two kinds of iron are no longer regarded as owing to the greater or less per centage of carbon, since it is known that the gray soft iron, malleable at the ordinary temperature, is a mixture of steel or steel-like iron with carbon, while the white, hard, and brittle iron is a true chemical compound of iron with the entire quantity of carbon present.

The analogy between the gray and white pig iron on the one hand, and soft and hardened steel on the other, is unmistakable; but no trace of uncombined carbon has ever been found in slowly cooled soft steel. Even cast-steel, which contains from 1·9 to 2·0 per cent. of carbon, and which on account of this large per centage can no longer be forged, has never been found to contain uncombined carbon after the slowest possible cooling. It is only when the per centage of carbon amounts to 2 25 or 2·3, that carbon separates in the slowly cooled metal, and communicates to it the characters of pure pig iron. If, therefore, a distinction is to be drawn between steel and pig iron, founded upon a character determined by the combining proportions, it would correspond with a per centage of carbon amounting to 2·25 or 2·3, because a part of the carbon is then separated on gradually cooling the mass. The more the per centage of carbon increases from this minimum to the maximum of 5·93, the lighter is the color of the metal and the greater the hardness of the white variety. In the gray iron, on the contrary, the quantity of carbon which separates, and which determines the darker color and greater softness of the metal, as well as the greater or less per centage of carbon remaining in a state of chemical combination with the iron, is dependent upon the more or less gradual solidification of the melted mass. It is therefore not sufficient to know the per centage of carbon in pig iron, as ascertained by analysis, in order to form an opinion as to the behavior of the iron in question; but it is at the same time necessary to determine how much of that cabon is chemically combined with the iron, and how much is present only as a mere mechanical admixture. With regard to the metallurgical processes, the object of which is to separate the carbon from pig iron for the production of steel or bar iron, the state of combination in which the carbon exists, is of far greater importance than the total per centage of this element. White iron requires for this purpose methods and processes different from those applicable to gray iron; and cases may occur in which the smelter would be obliged to convert gray into white iron, even although this has to be effected by an addition of carbon, notwithstanding that its separation is the real object of his operations.

[Concluded next week.]

American Wine.

Mr. Cist, in a recent number of his Advertiser, gives the following interesting account of the present and prospective conditions of grape culture and wine making in Cincinnati and in the vicinity. He says:—

"I have recently visited the wine cellars of Messrs. Longworth and Zimmerman, on Sycamore street. Mr. Zimmerman, the active partner, with his two sons, has been engaged in Europe for years in the manufacture of wine, and considers the Catawba a finer basis for first rate wine, than any in Germany or France. The drawing off and properly ripening wine they consider of more importance to the development of a fine article, than the original manufacture.

The wine cellars of this establishment are 105 feet in length, an average of 35 in width, and 18 in height. Each seasons wine is kept by itself, in casks of 2,000, to 2,500 gallons capacity, and none of our native wine is bottled in this establishment until it has been four years in casks. Thus the wine bottled this season is the vintage of 1848, as that of next year will be the vintage of 1849. In this way the entire sediment, precipitated by successive fermentation, is retained within the cask.

Messrs. Zimmerman will put up this season 30,000 bottles; in 1853, 50,000; and in 1855, 100,000. What will be done beyond that period must depend on the yield of the grape crop in 1853; and later seasons. All this is Catawba wine, termed Still, in distinction from Sparkling Catawba.

Mr. Longworth is engaged in the manufacture of Sparkling Catawba, at his wine cellars on Butler street, of Broadway. He made in 1850, 50,000 bottles; in 1851, 75,000, and this year he will put up 105,000 bottles.—Sparkling Catawba requires fifteen to twenty months for ripening before being ready for market. Mr. L. has also dry and sweet wines, the first of the Catawba, and the other from the Isabella grape.

Messrs. R. Buchanan, Corneau and Sons, G. P. Bergen, Rehfuss, Yeatman, Miller, and others, are also extensively engaged in the manufacture of Catawba wine. All these persons label their wines. The aggregate annual manufacture of first wine may be put down at 150,000 bottles Still, and 180,000 Sparkling Catawba.

Probably 30,000 bottles Still Catawba wine is made, sold, and drank in this vicinity by Germans, mostly the product of small vineyards. This is unbranded, and of various qualities—the greater part of inferior quality. But whatever may be the quality of our native wines, they are all pure; that is from anything else than the juice of the grape.—One or two manufacturers make sweet wines to a small extent, acknowledged to be fictitious.

The supply of native wines, greatly as it is on the increase, hardly keeps up with the increasing demand. All the wine older than five years, of Catawba, is out of market, and the Sparkling, although not requiring such a large lapse of time to fit it for use, is taken off as fast as it can be made for market.

There are about 1,200 acres of grapes in cultivation in the vicinity of this city. Every year adds to the quantity of bearing vines, and to the number of persons engaging in the business."

American Sewing Machines in Scotland.

The following compliment to American sewing machines, (nearly all of which have been illustrated in our columns) is taken from the 'Glasgow Chronicle':—

"A machine of American invention has been intruduced into this country by Mr. Darling, of Glasgow, (at whose manufactory numerous examples of it are now in operation) which carries the mechanical principle into a fresh department of human labor—namely, that of common hand sewing. The patent sewing machine promises to produce a revolution in the business of the seamstress as great as the powerloom effected in that of the weaver. This is, in truth, a moderate statement, for the capabilities of the machine have not yet been fully tested, and it is impossible to say how far its influence on the labor market may yet extend. By the hand the machine may be driven at the rate of 500 stitches per minute, by the foot at nearly twice that rate. Nor must it be supposed that the work executed at this extraordinary rapid rate is loose, irregular slop sort of work. On the contrary, it is strong, close, sewing, beautifully regular, such as it would require a very firm and well-practised hand to equal. Now, after all that has been said about American reaping machines, what will be said about this new American sewing machine, which seems likely to do still more towards facilitating indoor labor than the larger invention towards abridging the work of the field? We do not wish to exaggerate the probabilities of the case, but it must be remembered that the invention has so far passed the period of probation that it is in very extensive operation in America, that such trial as it has had in this country has been extremely successful, and that already its inventors are improving on it and adapting it still more carefully and completely to its end. Looking at it when at work, it is impossible to resist the couclusion that it is destined completely to supersede all ordinary plain hand-sewing, and that sewing, as an occupation for either men or women, tailors or seamstresses, is gone for ever.

Another Silk Factory.

The "Hartford (Ct.) Times" say:—"It may be remarked in publishing the above, as another evidence of the progress in silk manufacture which is now being accomplished by American skill and ingenuity, that the establishments of Cheney Brothers, located in South Manchester, about nine miles East of this city, are producing a most beautiful article of Sewing Silk, which is unsurpassed in strength, fineness of texture, and lustre, by any Italian product. The machinery in their mills is of the most ingenious character, and by its complete adaptation to the purpose, an evenness and fineness is obtained in their sewing silk which is, if we are not mistaken, altogether unequalled by any other silk made in this country, and not surpassed by any made in Europe. This machinery has been invented by the Messrs. Cheney themselves, and the ingenious and beautiful operation of its different parts is well worth witnessing.

Patapsco River.

The measures for the improvement of the channel of this stream are now in progress, as we learn by the 'Baltimore American."—The dredging machine has been, since the 11th ult., excavating the bottom of the river at Sparrow Point knoll, the intention being to reduce the knolls nearest the main channel and bring them to a common level with the bed of the river, say eighteen feet, after which the commissioners will determine on the requisite additional machinery for opening a channel, twenty-two feet deep, throughout the entire length of the river.

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NEW INVENTIONS.

Improved Car Wheel and Brake.

This improved wheel is cast in two parts—the rim and centre. The parts are loosely fitted to each other by means of projections on the centre and corresponding recesses in the rim. Each projection is furnished with a spiral spring which bears against the bottom of its recess. The centre is secured properly in its place by means of plates bolted to the rim. The inventor is Lucius Paige, of Cavendish, Vt.

Mr. Paige is also the inventor of some improvements in Railroad Car Brakes. In this improved brake the lever attached to the shoe bar is forced out, and the shoe drawn against the wheel by a contrivance of friction rollers fitted upon the circumference of the wheel. When the force which operates the brake is taken away, the levers are restored to their original position, relieving the car wheel from the shoe by means of springs.—The shoes are placed in sockets attached to the end of the shoe bars for the purpose of allowing the shoes to be adjusted and their faces or bearing surface to be brought nearer the peripheries of the wheel as the shoe becomes worn and shattered by use. The inventor has taken the proper measures to secure a patent.

Cotton Seed Planter.

G. W. Cooper, of Palmyra, Ga., has invented a new machine for planting cotton seed, for which he has taken measures to secure a patent. The nature of the invention consists in the peculiar manner of distributing the seeds, or of discharging them from the hopper. This is effected by means of vertical saws, (one or more) having a reciprocating motion and working through slots or openings in the bottom of the hopper, and using in connection with the saws, feeders, which are placed vertically upon a circular disc at the bottom of the hopper, the disc having a reciprocating [rotary motion. Cotton seeds being of irregular forms will not pass readily from a hopper without some mechanical device for drawing or forcing them out. This machine effects this object with certainty, and distributes the seed very evenly in the furrows.

New Kinds of Boots and Shoes.

Measures have been taken to secure a patent for a new kind of boots and shoes, invented by Albert L. Murdock, of Boston.—The soles, and the lower portions of boots and shoes are made of india rubber, or gutta percha, while the upper portions are formed of some textile fabric, such as woolen, cotton, &c. The lower portions of the boots and shoes protect the bottoms and sides of the feet from wet or moisture, while the upper portions form an elastic covering for the upper part of the feet or legs, and keep the lower portions properly adjusted to the feet, and at the same time allow the free perspiration to pass off.

Hose Protector.

David Demerest, of this city, has taken measures to secure a patent for protecting the *hose* of fire engines in cities from being injured while laid across streets and railroad tracks by cars and carriages passing over them. The invention consists in the employment of a portable section of a railroad track which section has a horizontal recess made in its bottom under which the hose is laid and carried to the place desired. This portable section of a railroad track is placed to cover and protect the hose from injury, and carts and cars will safely pass over the section track without touching the hose, and without being diverted from their line of passage, this is necessary for the free travel of railroad cars on tracks in the city. The invention is a useful and much needed one.

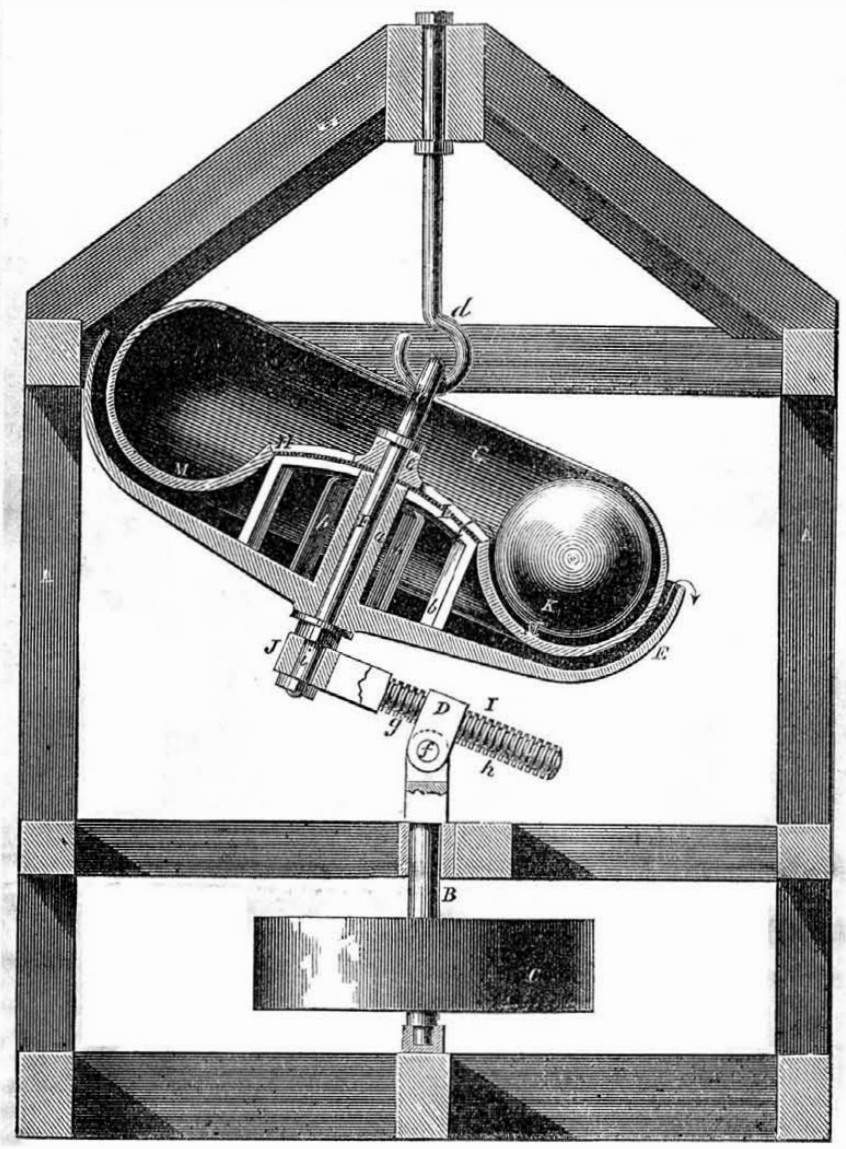
Hay Elevators.

Thomas F. Jarrett, of Horsham, Montgomery Co., Pa., has made some useful improvements in Hay Elevators, for which he has taken measures to secure a patent. In general character and appearance it resembles those in common use. But by means of a simple arrangement of a lever, catch, pulley, ropes, and weight, the elevator is brought under the control of the operator, so that it is guided to its destination freed from its load, and re-adjusted with great facility.

To Advertisers.

We intend, as usual, to devote a small portion of the new volume of the Scientific American to short advertisements. We are particular, and shall exercise unusual vigilance in admitting them—no quack medicines, or speculations of doubtful character, can be advertized at any price whatever. Wants of inventors, engineers, and mechanics, sales of machinery, manufacturing establishments, &c. will be admitted at the rate of 18 cents per line for each insertion,—owing to change in the kind of type which will be used, the same quantity of matter will cost no more than at present rates. We shall also require advertisements to be as briet as possible or they will be refused. No advertisements will be received which do not correspond with the general character of the subjects treated in the paper—no attention will be paid to any other

QUARTZ PULVERIZER, WASHER, AND AMALGAMATOR.



The annexed engraving is a vertical section of a machine for pulverizing and washing gold quartz; also for amalgamating and separating the gold. An American patent was granted to the inventor, P. G. Gardiner, of this city, on the 9th of June last, and a patent has also been issued in England. The nature of the invention consists in having suspended pulverizing and amalgamating basins, also their peculiar arrangement, both being attached to the same shaft with a screw interposed between them, and operating together with an oscillating motion.

A A is the frame of the machine, in the lower part of which is the driving shaft, B, which is vertical and receives motion from a steam engine or other motive power by a belt driving pulley, C. The upper end of the shaft is forked to receive a metallic block, D, which is attached and jointed to it by the pivot, *f*, passing transversely through the axis of the shaft; E is the lower or amalgamating basin; it is of cast-iron, of a circular form, and has a hub inside which receives the shaft, F, to which it is firmly secured; G is the crushing or pulverizing basin. It is formed with a channel, M, around its bottom to receive two balls (one, K, being shown); this basin has a hub, *c*, which fits on the shaft and rests on the hub, *a*. The part, H, of the basin rests upon a number of bearing pieces, *b b*, which stand up from the bottom of the basin. The raised circular part, H, has an opening around the shaft, F, which is covered with a wire gauze screen, L. The upper end of shaft F, has an eye, *e*, hung on a hook, *d*, of a strong vertical rod, screwed into the top of frame, A, which suspends the two basins with their contents. The lower end of shaft, F, is connected by a crank to the shaft, B. This crank consists of an arm, I, which is fitted to work freely in a slot or hole made in block, D, at right angles to the pivot, *f*; J is a metallic box which is bored to receive a journal, *i*, on the lower end of shaft, F. A spring, *g*, is applied between the block, D, and a shoulder near the end of the arm, I; another spring, *h*, is applied between said block and a shoulder at the opposite end of the rod; the tension of these springs is exerted in pushing from the block.

Operation.—The gold quartz to be operated on is first broken into pieces about the size of a man's hand or to egg size, and is fed in suitable quantities to basin, G, and is there subjected to the crushing and grinding action of the balls in the basin. A stream of water is allowed to flow into the basin, G; all the finely pulverized quartz is carried down through screen, L, passing into the amalgamating basin, E, which contains the mercury. In this basin a constant agitation is kept up by the peculiar motion imparted to it, which brings all the gold in the pulverized quartz into contact with the mercury. The light particles of the crushed quartz is washed away over the lip of the lower part of basin, E, by the constant overflow of the water at that part. The amalgam is withdrawn through a suitable valve in the bottom of the basin. The pulverizing and amalgamating basins have a peculiar oscillating motion, owing to the combination of the crank arm, I, connecting the axis of said basins, as represented, with the driving shaft. The lower side of the basins is continually changing, they having a swinging rotary motion. The balls travel round the channel of the basin and roll along with an easy motion owing to a continual shifting inclined plane being produced in said basin by the action of the crank, and the relation of the axis of the basins to that of the centre line of the suspension rod on which the basins are hung. The springs, *g* and *h*, admit of the crank arm, I, being lengthened and shortened in a measure, so as to balance the relative stroke of oscillation with the weight of balls employed; they also serve to prevent shocks and jarring in stopping and starting the machine.

We have been informed that the operations of this machine have been so satisfactory that a joint stock company has already been formed in this city with a capital of $1,000,000 to carry out the objects of the patent in constructing and working machines, selling rights, and granting licenses. A very large machine has been in operation for some time at the Phœnix Foundry, Vestry st., this city, where it can now be seen at certain periods grinding the quartz.

The claim of the patent is for "the arrangement of the vibrating pulverizing basin, and amalgamating basin attached thereto, with the screen interposed between them, said basins being attached to the same shaft." The working machine at the Phœnix Foundry has a longer shaft than the one shown in the above engraving; the amalgamating basin on it is also placed farther from the pulverizing one, and is not so large as the one represented above.

More information about the sale of rights machines or sale of the stock, &c., may be obtained by calling on Mr. Gardiner, Trinity Buildings, this city, or by letter addressed to him.

The Hillotype,

The "Troy Times" understands that Mr. Hill has perfected his discovery, so far as regards transferring all the color by a single operation. The only desideratum remaining is an aid in reducing the time required for making pictures from thirty minutes, to, if possible, less than as many seconds. A similar difficulty, but not so serious, occurred in the bringing out of the daguerrean discovery. Iodine, &c., were found to answer the purpose for the latter, but Mr. Hill has to deal with many colors, and a chemical that serves with one, may spoil or prove useless without the other. The stick is now on the yellow.—

[We saw the above in a great number of our daily papers last week. It certainly looks like the old story, as the "stick" has always been on the yellow.

A Mountain Borer.

An invention which promises to be one of the greatest utility is described in the "Hartford (Conn) Times. It is a machine for boring tunnels, the work of a Mr. E. Talbot, a practical mechanic, who states that in the rapidity and completeness of its execution, it will surpass every instrument of the kind yet conceived.

Worked into its own machinery is an engine of sixty horse-power, which drives four piston rods, horizontally, and these turn four halt circle plates, of stout proportions, furnished with circular revolving blades. These four plates are turned with exactness about one-fourth of a circle and back. and are all set upon a revolving plate of about ten feet in diameter, and as thus set, cut a circle of seventeen feet in diameter. The machine weighs about eighty tons. The motion obtained by this invention is novel—entirely new. By it the revolving knives, each running its quarter circle, cut completely from the centre to the circumference, and they do their work steadily and surely, cutting a round hole with astonishing celerity.

Massachusetts Mechanics' Association.

The Seventh Exhibition of this Association will be held in Fanueil Hall, Boston, next month. We understand that the Committee of Arrangements have made, and are now making proper efforts to have the exhibition in every respect worthy the high character of the mechanics of New England.

The receipts for the week ending August 6th, were $8,556,00; visiters, 24,979; daily, 4,163.

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Scientific American

NEW-YORK, AUGUST 13, 1853.

Reaping Machines.

There is a great amount of competition this year, in reaping and harvesting, power machines. We have seen, in all our excellent agricultural cotemporaries, and have heard from many eyewitnesses, accounts of various trials, to test the qualities of different machines. Last year we presented detailed statements of a number of such trials, but such experiments have been so numerous this year, and have been spread over such a vast extent of our country, that we cannot do so without taking up too much space in our columns. These trials are interesting to us; they afford us useful matter for reflection and instruction. Mowing and reaping machines have been known in this country since 1833, and yet very few of our people—even those most interested personally in such machines—cared very much for them, or gave them the least attention until within the past four or five years. The public also appears to have been supremely callous respecting either their use or necessity, until their utility and benefits were fully displayed in the presence of Royalty, in a country 3000 miles distant from the native place of the two original American inventors—McCormick and Hussey. Thus once again was the truth of that saying confirmed —"a prophet hath no honor in his own country." Even in Britain it has been discovered that a reaping machine was invented many years ago, and its inventor (Patrick Bell) also was no exception to the above saying.

Our agriculturists seem determined to make amends for past neglect in relation to power reapers; we judge so because of the numerous trials to which we have alluded, and not only from such experiments, but also from the many modifications of such machines which have recently been brought before the public. In the Crystal Palace no less than ten reaping and mowing machines are on exhibition. There is McCormick's, patented in 1834, improvement patented in 1847, and re-issued in 1853. [No less than 7000 of these machines have been sold in the West] Obed Hussey's patented, in 1834, and with which its inventor is now in England, astonishing the people there by exhibiting one of his latest improvements; Ketchum's, of Buffalo, patented in 1847; Many's, of Freeport, Ill., patented in 1851; Adkins', of Illinois, patented in 1851; Seymour & Morgan's, Brockport, N. Y., patented in 1852; Forbush's, of Buffalo, N. Y., patented in 1852; Longett & Griffing's, 25 Cliff street, N. Y., and Burrall's, of Geneva, N. Y., patented in 1853, and C. Denton's, illustrated two weeks ago in the "Scientific American." All these machines are on exhibition in the gallery of the American Department; there is not much difference between some of them, and in our opinion, there is still room for improvement. The motion given to the cutter is reciprocating in all of them, and this is derived from the rotary motion of the wheel as the machine is drawn forward. The motion of the cutters and various movements of all the machinery are given by gearing connected with the rolling wheel, some of which is exceedingly clumsy. The reels and parts of these machines look as if they were intended to be driven by fifty horse-power steam engines, instead of a team of horses. Every good harvester should rake and lay down the grain in proper bunches for binding, at least lay it down in proper rows. We understand that some patent rights for reaping machines have been sold within the past month, for very large sums, one whole patent, we have been told, was sold for no less than $120,000. This may be true, but we cannot help paying a just tribute to the original inventors of these machines—McCormick and Hussey. They took out the first patents, and it was their machines—McCormick's at least—which first gained so much honor for our country at the World's Fair in London, and which has been the means of so deeply interesting our farmers at home.—Great good must result from the competing experiments of such machines, and we have no doubt but some of our Eastern mechanics may strike a new vein by a comparison of the merits and defects of those on exhibition at the Crystal Palace; we would direct their attention to this subject. To our Southern and Western mechanics is due all the honorable credit, so far, which belong to the inventors and improvers of Reaping and Mowing Machines.

History of our Steam Navy.

In 1813 Robert Fulton proposed to the President of the United States to construct a steamboat which would carry heavy guns, and move at the rate of four miles per hour. In 1814 a law was passed authorizing the President to cause to be built and equipped, one or more floating batteries for the defense of the waters of the United States. The harbor and coast defence was committed to a committee, who employed Fulton as engineer, and who laid down the keel of our first navy steamer on the 20th June, 1814. This was at the shipyard of A. & N. Brown, in this city; in four months this vessel was launched, and, was named the "Demologos" and "Fulton the First." It was not until June, 1815, that her engine was put in and fitted up completely; on that day she made a short trial trip; but on the 4th July succeeding she made a trip of 26 miles out into the ocean. This ship was totally unfit for navigation, and was laid up at the Brooklyn Navy Yard as a receiving ship until 1829, when, in a most unaccountable manner she was blown up, killing 24 men, 1 woman, and wounding 19; our first naval steamer was an unfortunate one—as nearly all its successors have been. In 1838 "Fulton the Second" was built for the defence of New York Harbor; she was made strong and carried a heavy battery, but she too was totally unfitted for the purpose of ocean navigation. She had two horizontal engines, with cylinders of 50 inches diameter, and 9 feet stroke, which were built at the West Point Foundry, and cost $40,198 57. Her boilers were of copper, and cost $93,396 06—an enormous amount of money. Her total cost was $299,649 91. This vessel lay at the Brooklyn Navy Yard a useless hulk, until 1851 when Chief Engineer Stuart was directed to re-construct it entirely. The old engines were taken out, also the copper boilers. A single inclined engine built by H. R. Dunham & Co., along with iron boilers, were put in at a cost of $75,909. By statistics of this vessel's performance, obtained from Stuart's splendid work on Naval Steamers, it appears that she made as high a speed as 20 miles per hour. For this extraordinary speed we cannot account—her engine and model would not lead us to believe that she could make such time as, upon good authority, it is stated she has made. The three "Fultons" had paddle-wheels.

In 1842 Lieut. Hunter, U. S. N, took out a patent for a new submerged wheel for the propulsion of steamers, and upon the strength of some experiments made with a small boat on the canal, at Washington, the Government ordered a vessel named the "Union," of 1000 tons burden, to be constructed at the Norfolk Navy Yard; to test this wheel on a large scale. This wheel was a submerged paddle-wheel, revolving horizontally in a case under water. This vessel was employed for about 18 months in the Gulf of Mexico—had two sets of engines put in her, and had a number of alterations made in the wheel, and yet never made over 4 knots per hour. In 1846 this vessel was laid up in the Navy Yard at Philadelphia, her machinery and boilers taken out, and was turned into a receiving vessel, after costing $172,477 60.

In 1843, a small iron steamer, named the "Michigan," was built for cruising on the northern upper lakes, and has done good service since.

The "Mississippi," the flag-steamship of Commodore Perry, in the Japan Expedition was built in 1840, at the Navy Yard, in Philadelphia, and her engines were constructed by Merrick & Town, of that city, from designs by Charles W. Copeland, of this city. Her cost was $550,254; repairs in 1852, $94,954. This vessel has side wheels, and has done great and good service to the country; it is believed that she has steamed a greater distance than any war steamer afloat, and has required but little repairs, and she will last quite a number of years yet. The "Missouri," was built at the Brooklyn Navy Yard, in 1841, from the same lines as the "Mississippi," and her engines and machinery were constructed, at West Point Foundry, Cold Spring, from designs by Mr. Copeland, Chas. H. Haswell being then engineer in Chief of the U. S. N. Her cost was $598,483 78. On the 23rd of Aug., 1843, this fine steam frigate, was destroyed by fire, at Gibraltar. She was a fine sailor, and was, in every respect like the Mississippi, only she had a 10 feet stroke, with 62½ inches diameter of cylinders, while the cylinders of the former are 75 inches diameter, and the stroke is only 7 feet. The Princeton" was also built in 1843, with Ericsson's engines and propellers. This vessel was a failure, so far as the quality of her hull was concerned, and lasted about six years; her speed was about six miles per hour with steam alone. Two small steamers (paddle-wheels) named the "Spitfire" and the "Vixen" were purchased by the government during the Mexican war. They have undergone many repairs since, and are of a very inferior character.

The "Allegheny" was constructed of iron at Pittsburgh, from plans by Lieut. Hunter, in 1847, and fitted with two of the designer's submerged wheels. She was 1,000 tons burden, and 33 feet broad. Her whole cost was $292,053,72, including $10,000 for the patent right of the wheel, a most enormous price indeed, for a small iron steamer. This vessel was sent on a trip to the Mediterranean, and and on her return in 1849, the Hunter wheel was condemned; side wheels were recommended, but she was not fit to go to sea again. During 1852 she underwent great alterations, and a propeller designed by Engineer Isherwood, was substituted for the Hunter wheel. One of Pirrson's condensers was also applied, but none of these changes can bring it up to six knots per hour.

In 1850 the "Saranac" was built at the Portsmouth Navy Yard, N. H., with engines built by Jabez Coney, of Boston, from designs by Charles W. Copeland. This vessel has paddle wheels, maintains a respectable speed, is very efficient, and a credit to the service.

The "San Jacinto" was constructed on the same lines as the Saranac, at the Brooklyn Navy Yard. Her engines were designed by C. W. Haswell, Engineer in Chief U. S. N., and were built in 1850 by Merrick & Son, Philadelphia. She was to be fitted with a propeller by Mr. Haswell, which was to be placed at the one side of the centre line. Before the propeller was put in, Mr. Stuart superseded Mr. Haswell, and got a different propeller placed in her. His work says that she run at the rate of 18 miles per hour, in New York Harbor, but these miles must have been exceedingly short. This vessel cost $205,593,-77, and on the whole is considered to have done no credit to the service as yet.

The "Susquehanna" was launched from the Philadelphia Navy Yard in 1850. The engines were designed by C. W. Copeland, and were built by Murray and Hazlehurst, of Baltimore. Her whole cost was $710,408,00. She has paddle wheels, but has not matched the Mississippi.

The "Powhattan" was built at the Norfolk Navy Yard, and was ready for sea in 1852. Her machinery was built by Mehaffy & Co., Norfolk, under the charge of engineer Sewell, from designs by C. H. Haswell, Engineer in Chief. This is a large steam frigate a fine sailer, and had the San Jacinto been constructed like the Powhattan, with paddle wheels, she would no doubt have done credit to the engineer who designed the engines.—The cost of her engines and machinery was $383,213,68.

A "Water Witch the Second" has also been built, using the old engines, but employing Morgan's Paddle Wheel, from designs by Engineer Isherwood. These wheels do no credit to our engineering genius; they are more expensive, and are no more effective than the old-fashioned radial kind. Three or four other steamboats have belonged to the Navy—mere tug boats not worth naming.—At the present moment there are only three efficient steam frigates in our Navy, and considering the advancement and improvements made in our mercantile steamships, it is a disgrace to our government. We also assert that we have not a truly respectable steamship in our Navy—one worthy of our country. Our government engineers have been peculiarly unfortunate with the propellers which they have built. While the French and English have very fine, large, and swift propeller line of battle ships, we have not a propeller-frigate worth the name. We would advise our government to get their steamers built entirely by contract; they pay too much for them. One of the Collins' line cost $736,035, only $25,627 more than the Susquehanna, and is about one third larger. There is something rotten in the system, for there are able engineers in our Navy; where the fault is we cannot tell, we can only direct attention to it, hoping that we may do "the State some service."

Reverend Inventors.

Having been asked, a few days ago, "Who was the inventor of percussion caps?" Our answer was "we cannot tell." On the very next day after this question was asked, we saw it stated, in a short article on the subject "Progress of Fire arms," in the "Philadelphia Ledger," that the Rev. Mr. Forsyth invented the percussion lock in 1807. This is nearly correct; we have been aware of it for a number of years, as the Rev. Mr. Forsyth's patent has become a standard subject of reference in many of our patent law suits, and if we are not much mistaken—as we quote from memory—Judge Kane referred to it in the reasons given for his decision, in granting an injunction against the Barnum Planing Machine three years ago. The allusion to this clergyman's invention, puts us in remembrance of what clergymen have done in the line of invention.

The inventor of gunpowder was Constantine Anelzen, a monk of Friburg, and the Rev. Mr. Forsyth, a Presbyterian clergyman, invented the application of detonating powder to fire-arms; thus two "men of peace" were confessedly war-like inventors, and their discoveries have had a most important effect on the destiny of nations. The Rev. Dr. Cartwright, an Episcopal clergyman in England, was the inventor of the power loom, another invention which has produced most wonderful results in benefitting man, and which like the radical and republican doctrines of Major Cartwright—the divine's brother—has had a tendency to level the comforts of a large class upwards. The Rev. Enoch Burt, of Ct., a congregational clergyman, was the inventor some of the best improvements ever made on gingham and harness looms. The Rev. Dr. Nott, of Union College, N. Y., a Presbyterian clergyman, is the inventor of a number of excellent improvements in stoves, and was the first to apply the waste heat of smelting furnaces to economical purposes—an invention which has been re-vamped abroad, and become famous, as a re-importation, within a few years. The Rev. R. Stirling, another Presbyterian clergyman, was the inventor of the Hot Air Engine, and the invention of balloons is ascribed to Francis Lana, a Jesuit. We have no doubt but the list of Reverend Inventors, could be extended to a considerable length, were we in possession of the means to explore into the occupations of those who have been granted patents in our country. What they have done in advancing the useful arts, affords an instructive lesson to those—and the number is not small—who entertain the opinion that none but practical men—meaning thereby "tradesmen" alone—have produced useful inventions. We are well acquainted with two clergymen, active pastors and excellent preachers, who spend many useful hours in mechanical pursuits, and who can plan and construct machinery and cabinet work with a skill equal to that of many reputable practising mechanicians.

Canada Patents.

There are no general laws by which patents can be secured in Canada by American citizens. The power invested in the Canadian government is restricted to resident subjects, who must be inventors. Some change ought to be made so as to enable all to secure patents in Canada and other colonies, as the English Government has denied its own jurisdiction in this respect,—therefore the door is shut against all who are not bound to that Government.

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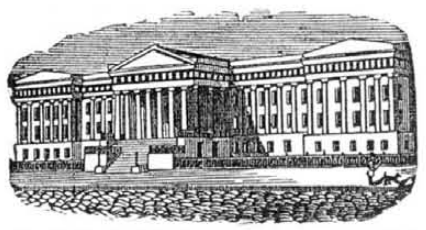

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUG. 2, 1853

REED MUSICAL INSTRUMENTS—By J. A Bazin, of Canton, Mass : I claim, in the construction of organs, reed, and other similar instruments of music, first, flatting the thirds, sixths, and sevenths of the scale by means of the regulating cylinder, constructed as described, or by any other analogous contrivance, as set forth.

Second, the valve, constructed, as described, of the two parts, with the two springs or their equivalents, in combination with the perforated plate, for the purpose of sounding the note flat or sharp, as set forth

Third, the combination and arrangement of the sliding bar, the buttons, the bent wires, by which means the key board may be unlocked and moved in either direction by one hand, as set forth.

Fourth, I claim the use of two or more wind-chests in the same instruments, for the purpose of providing a separate supply of air for the bass and treble notes, as set forth.

Fifth, the peculiar arrangement of the bellows and wind-chests, the latter being placed below the former, and communicating with the reed box by means of flexible passages passing up through the bellows, as described. which arrangement of parts enables me to make use of two wind chests, as set forth.

Sixth, hanging the pedal with a movable fulcrum to prevent friction upon the foot, and to enable it to be operated with more ease and convenience, as set forth.

Seventh, the construction and arrangement of the air passages above and below the reed as described, for the purpose of admitting the air, and permitting it to escape at the butt end of the reed, as set forth

Eighth, the presser bar, so constructed and arranged, as to keep down the rear portion of all the valves, while their front portion is left free to be operated by the keys, thereby modifying the tone of all the notes of the instrument, as set forth.

SEED PLANTERS—By G. W. Brown, of Tylerville Ill Ante-dated Feb. 2, 1853 : I claim, first, the oscillating horizontal wheels, or distributors, in the bottom of the hoppers, having slots and holes of various sizes, in combination with the stationary caps and pins for the discharge of different kinds and quantities of seeds, as set forth.

Second, I also claim the arrangement of the covering rollers, mounted as described, and performing the purpose of covering the seed, elevating the cutters, in turning around, and also in adjusting them to different depths, as set forth.

SEED PLANTERS—By Lebbens Caswell, of Harrison, Me. : I claim placing the axle of the gauge wheels on a fulcrum, in an adjustable slide, as described, so as to plant at any desired, and at the same time a uniform depth, as set forth.

WATER REGULATOR FOR STEAM BOILERS—By S. R. Clime, of Philadelphia, Pa.: I claim the water chambers described, and the contrivance and machinery, by which their action is aided and facilitated.

ABDOMINAL SUPPORTERS—By H. B. Conant, of Geneva, Wis. : I claim constructing the supporter with two encompassing springs, attached respectively at their centers to the front and hind pads (the hind spring being slightly curved upwards in the middle, and the front spring correspondingly curved downward, and both springs straight on their flat sides, as described, and uniting said springs at their adjacent ends, with straps of adjustable lengths, whereby its pressure may be varied at pleasure, and the same supporter worn by persons of different sizes, as set forth.

RAILROAD CAR WHEELS—By T. J. Eddy, of Waterford, N. Y. : I claim a cast-iron car wheel made in one piece, in which one end of the hub is united to the rim by means of a disc, and the other by means of a series of spokes, as set forth.

PAPER RULING MACHINE—By C. S. Boynton, of New York City : I claim, first, the employment or use of the guides, by which the paper may be properly adjusted upon the apron, and fed underneath the pens.

Second, I claim the guides or stops attached to the selvedge of the endless apron, for the purpose of elevating the pens from the paper, at required distances, according as the guides or stops are adjusted upon the apron, and thereby causing the paper to be ruled in lines of the desired length, and having the requisite spaces between them, as described.

[This is an excellent improvement on such machines, and has been in successful operation, in this city, for some time.—ED.

SUBMARINE TUNNELS—By J. R. Miller, of Jersey City, N J. : I claim constructing submarine avenues by casting them in short managable sections, sinking each successively to its place, and uniting their ends successively, by means of flanches, bolts and packing, as described, when these are combined with a lip or lips, at the end of each section to ensure the bolt holes, and other corresponding parts to come and rest opposite to each other, as each succeeding section is sunk to its place; and when the structure is made to rest upon a graded bottom, as the work progresses, and is held thereto by superincumbent weight, when completed. I do not claim any one, or any number of the elements specified, except in combination with all the others, nor when used for any other purpose than that specified

TEMPLES FOR LOOMS—By J. A. Scholfield, of Westerly, R I : I claim the application of a stationary spur plate, to the temple, with the pins in said plate inclined at an angle to the breast beam, so as to allow the cloth to be drawn down over the tops of said pins, as the lay beats up, and from their inclination, preventing the cloth from receding, during the backward motion of the lay, as described.

STEAM BOILERS—by John M. Reeder, of Memphis, Tenn : I claim the application to steam boilers of a stem and the two valves, and the mode of their operation, which will, at any given pressure, allow the water in the boilers, to pass freely on the fire underneath them, thereby retaining the steam and prevent explosion. as described.

MACHINES FOR MAKING SPIKES—By J. R. Richardson, Jas. Waterman, & Ebenezer Wilder, of New Castle, Pa. : We claim, first, the manner of forming the point of the spike, as described, viz , by means of the combination of the wide dies, resting on the discs of the rollers, and the pointing rollers, arranged as set forth.

Second, we claim slightly withdrawing the header, after the head is completed, for the purpose of relieving the jaws from its pressure, before they begin to open, and holding it in that position, with the spike head therein, until the jaws are opened, and the movable jaw and die are nearly or quite withdrawn from the spike, then withdrawing the header to its farthest position from the dies, allowing the spike to fall, thus causing the header to perform the duty of a clearer, as described.

Third, we claim the combination of the cutting guide loop, the cutter and the holder, as constructed and operating with the movable jaw and movable die, for the purpose of cutting off the blank at sufficient distance from the ends of the dies to leave material for the head, and carrying it over to the stationary jaw, at the same operation, as described

Fourth, we also claim attaching the gauge firmly to the carriage of the pointing rollers. so that it will be withdrawn as the point is drawn out by the rollers. and returned to its position, when the pointers are withdrawn without any other mechanism to actuate it, as described.

[See description of this excellent machine on page 188, Vol. 8, Sci. Am]

ATMOSPHERIC TELEGRAPH AND RAILWAY—By I. S. Richardson of Boston, Mass. Patented in England Dec 7, 1852 ; I claim, first, the check plate, consisting of three pieces, two being stationary, and the third or middle one, revolving between them, air tight, constructed as described, or in any manner substantially the same, and for the purposes set forth.

Second, the turn table constructed as described, of the ring and its station box, in combination with the two rings, or their equivalents. as set forth.

Third, the method of announcing the arrival of the plunger, by means of the compression of the air within the cylinder at the instant of the arrival of the plunger, operating through the orifice in the cylinder, the valve, and the hammer, as described, or in any other manner equivalent thereto, the compressed air being the agent.

Fourth, I claim the combination of the pendant lever with the valve and spring, or analogous devices, by which means the valve is drawn up to its seat when no longer kept open by the pressure of the atmosphere, and firmly locked in that position, until the lever is again tripped by the passing plunger or load.

[See engravings of this invention on page 265, Vol. 8]

PRINTING PRESSES—By S. P. Ruggles, of Boston, Mass Ante-dated Feb 2, 1853 : I claim the combination of the adjustable gauge with the diverging spriogsfor catching and guiding the edge of the sheet when it is sliding to its position, as described.

INDICATING THE HEIGHT OF WATER IN STEAM BOILERS—By Nathan Thompson, Jr, of Williamsburgh, N. Y. : I do not claim either floats or valves, or chambers or levers as my invention, nor the combination of a float within a boiler, with indicators or alarms.

I claim the method, as described, of slowing and stopping the main engine, by means of a float, or its equivalent, which is governed in its position by the height of the water in the boiler, whereby I am enabled to furnish a reliable and not to be diregarded intimation of the level of the water in the boiler.

Secondly, I claim a hook and pin, or their equivalents, in combination with a boiler float, whereby said float is prevented from acting during ordinary fluctuations of the water level, as specified.

(The boat is made to work the throttle valve—ED]

MACHINERY FOR MAKING RAILROAD CHAIRS—By Wm. Van Anden, of Poughkeepsie, N. Y : I claim the combination of rollers with adjustable shear stocks for cutting and shaping the lips of wrought-iron railroad chairs, as set forth, and their combination with the dies for that purpose.

I also claim the use of a movable drop, upper half or female die, in combination with a stock, as set forth, and their combination with the discharging apparatus operated as set forth.

I also claim the use of adjustable and removable benders, in bender stocks, in combination with the levers and cams on the main shaft, for operating the same in an oblique and downward direction, and their combination with the dies and cutters for making wrought-iron railroad chairs.

OBVIATING THE DANGER FROM STEAM BOILER EXPLOSIONS—By Stephen Waterman, of Williamsburgh, N Y. : I do not confine myself to placing the cold water reservoir on the top of the safety-chamber, as it may be placed in other positions, and instead of communicating with the safety chamber, may communicate with the steam space of the boiler ; nor do I confine myself to the particular mechanical means by which the tearing apart of the safety plate is made to open the communications between the water reservoir and the boiler, and safety chamber

But I claim the combination with the safety-chamber and safety plate of a cold water reservoir, which has means of communication at the lower part with the safety chamber or steam space in the boiler, and at the upper part, with the steam space in the boiler, which said means of communication are closed when the boiler is in proper operation, by cocks, or their equivalents, which are caused to open by the tearing apart of the safety plate in any manner as described, for producing the effect set forth

[See notice of this invention on page 204, Vol. 8, Sci. Am]

ARRANGEMENT OF PIPES FOR HOT BLAST FURNACES - By Jesse Young, of Franklin Furnace, Ohio : I claim the arrangement of a series of angular horizontal pipes, three short vertical connecting pipes, which also serve as supports or pedestals, and a hollow base, through which the cold air passes into the pipes, and upon which hollow base the pipes rest, by which arrangement the air is made to pass slowly through the pipes and base, and is exposed a sufficient length of time to the action of the heat to become heated with a small expenditure of fuel.

[This is a valuable invention, and one which will enhance the iron interests at the West very extensively. See brief description of this invention on page 107, Vol. 8.)

MANUFACTURE OF PAPER STUFF—By J T. Coupier & M. A C Mellier, of Paris, France Patented in France, May 7, 1851: We do not claim the use of alkalies in the treatment of vegetable fiber for the preparation of paper pulp ; nor do we claim the individual parts of the apparatus employed in our process

But we claim first, the process described, of reducing straw and other similar vegetable matters into pulp for making paper, said process consisting in applying and circulating the solution of the hydrate of soda or potash in the manner described, and at or about the strength indicated, in combination with the apparatus, as described, by which means we are enabled to effect the reduction of a very large amount of pulp with a comparatively small quantity of liquor, and preserve the requisite strength in the liquor, and also obtain facility for its evaporation

We do not claim the use of hypochlorites for bleaching pulp, but we claim, secondly, the employment of hypochlorites in the process of bleaching straw or similar vegetable matter, when prepared as described, for the purpose of making paper, that is to say, using them at or about the strength set forth, viz ; 3 deg-ees Baume ; and we claim this degree of strength only when employed upon such materials.

[This is a singular claim truly.]

ELASTIC TYPE FOR PRINTING ON IRREGULAR SURFACES—By Julios Herriet, of New York City, (assignor to J. Gaylord Wells. of Hartford, Ct : I claim making by casting in moulds, or by pressure plates with raised characters or figures, the entire substance of such plates being sufficiently elastic as to adapt it to printing, as described.

HOT AIR ENGINES—By A O. Willcox, of Philadelphia, Pa : I do not claim the use of renovating discs outside of the working cylinder, either when alternately travelling through the heated and cold air, or when stationary, and alternately transmitting heated and cold air, as I am aware such have been before used.

I claim placing the economizing discs within or attaching them to the driving piston itself, whereby I am enabled to effect the complete rarefaction of the heated air, while the piston is descending, and before the cold air is again let into the cylinder, as described.

[This appears to be like Stirling's Air Piston : see page 668 "Galloway History "—ED.]

I also claim enclosing the exhaust end of each single acting working cylinder, with an air tight head, when combined with a self acting valve, which opens from said exhaust end of the cylinder into the eduction pipe, in order to exclude the external atmosphere ; and also for the double purpose of enabling any degree of rarefaction to take place within the exhaust end of the cylinder, without the return of air from the reservoir, and to allow the spent air finally to escape to said reservoir, as set forth.

I also claim enclosing each working cylinder within a jacket (of any suitable material), regularly increasing in thickness from the bottom to the top, in such a manner that when it is surrounded by water or other fluid, the temperature of the working cylinder will be kept reduced to a proper and nearly uniform degree (without much waste of heat), so as not to injure the lubricating fluid inside, whereby I am enabled to apply the heat of the furnace immediately under said cylinder, thus obviating the use of an expansion heater, as described.

ANTI FRICTION BOXES—By G. T. Parry, of Spring Garden, Pa (assignor to John Rice, of Philadelphia, Pa : I claim making the rollers in the form of double frustrums reversed, and united at their bases, and travelling in circular grooves of nearly corresponding form of the surfaces between which the rollers are interposed as set forth.

DESIGNS.

SEWING BIRD—By A. Gerould & J. H. Ward, of Middletown, Ct.

COOKING STOVE—By Julius Holzer, of Philadelphia, Pa. (assignor to North, Chase & North.

A Complimentary Letter.

MESSRS. EDITORS—I cannot let this opportunity pass of thanking you for the able manner in which your paper has treated many important subjects of late. Its firm unyielding opposition to all forms of humbug and imposture, which come before the world under the name of "new invention," has prevented many unscientific persons from investing their property in worthless machinery. Its strict construction of such patent "claims" as have of late grown so broad as to become unjust monopolies, and threaten to retard rather than facilitate the business operations of the country has been of great service. It has very properly exposed the hyperbolical statements of the daily press in regard to the novelty and efficiency of machines and apparatus of doubtful utility, and convinced the public that Technology is a department of knowledge in which most of our newspaper editors are sadly deficient. I wish you complete and continued success in all your undertakings for the advancement of the useful arts. S. D. T.

Seneca Falls, N. Y., July 30, 1853.

[The above letter is from one of our most intelligent readers ; it is a spontaneous tribute —we shall always endeavor to merit such opinions.

Flax Culture in Indiana.

Mr. R. T. Brown, of Crawfordsville, in a communication to Governor Wright, President of the Indiana State Board of Agriculture, says :—

"I send you enclosed a few samples of flax cotton presented to me by the Hon. H. L. Ellsworth, of Lafayette. Mr. Ellsworth has secured the machinery necessary for the manufacture of cotton, and will have it in operation early in the season. He has on hand the stem grown on 120 acres last season, which, from experiments already made, will, he supposes, yield about 300 pounds per acre of cotton similar to No. 2 of the enclosed specimens. The expense of reducing the fibre to this state, after the stem is produced, is about two cents per pound, which, at the usual price of cotton (10 cents) will leave eight cents per pound, or $24 per acre for the farmer who produces it. To this must be added the value of the seed, which will range from $6 to $8 per acre—giving a final result of $30 at least for each acre. This is Mr. Ellsworth's calculation.

Recent Foreign Inventions.

BURNING AND APPLYING GAS.—J. Whichord, and S. E. Rosser, of London, patentees. This invention consists ; firstly, in an improvement in the mode of burning and applying gas for lighting. This is effected by the introduction of a ventilating bell and tube, placed in a convenient and suitable position above the gas-burner. These are made with a trough or channel, to receive the condensation of any aqueous vapors arising from the combustion of the gases ; the said trough or channel being so placed that the aqueous products can either be carried away by a pipe (or other means) or become evaporated, and driven off through the chimney when the gas is burning.

Secondly, in effecting such an arrangement of the globes, glasses, and chimneys of gas burners, as to introduce a current of cold air between the external surface of the ventilating bell or glass, and the interior of the globe which encloses the gas-burner ; and also a second current between the external surface of the gas-chimney and the inner surface of the ventilating glass or bell. In this arrangement the pendent glass or bell above the burner dips down below the mouth of the surrounding globe, and at the same time descends externally below the upper orifice of the chimney of the gas-burner. By this means the atmospheric air, which can only enter at the top of the globe, is made to descend between the inner surface of the globe and the outer surface of the pendent bell, carrying with it the whole of the products of the combustion of the gas up the ventilating tube.

Thirdly, in an improved mode of applying gas for heating purposes. The gas burner of a stove is, in this case, placed within or under a tube or casing for conveying the heat through a chamber surrounded with water or other fluid. This chamber or casing is made with a trough or channel placed in a suitable position for conveying off the condensed aqueous vapors that may be formed inside the chamber by the combustion of the gases, and is so placed, that the aqueous products can be either carried away by a pipe, (or other means) or become again evaporated and carried up through the chimney. The tube or casing may be made similar to the worm of a still or refrigerator, and have its end turned down to carry the aqueous products off into a vessel placed to receive them.

SMELTING METALLIC ORES.—T. B. Smith, of Bristol (England) patentee.—This invention has reference more particularly to the first operation in smelting sulphuret copper, and other ores ; namely, their calcination, by which a portion of the sulphur is expelled, and the metals they contain are oxidized.—The inventor proposes to avoid the inconvenience and injury of the ordinary process caused by allowing the free vapors to pass into the open air ; and, by condensing the gases which are evolved in the process in flues or pipes, to use the sulphurous vapors for the manufacture of sulphuric acid. For these purposes he uses nearly closed chambers, furnaces, or retorts, which are heated from without, and by passing heated air into these he does not admit the products of combustion from the fire to mix with the vapors or gases evolved in the process of calcination, as such products would render these vapors unfit for the manufacture of sulphuric acid. With the chamber, furnace, or retort employed, he connects suitable flues or pipes, to carry away the vapors, in which he condenses the volatized metals, while the sulphurous vapors are carried away to suitable chambers, and proceeded with in the ordinary manner of obtaining sulphuric acid from them.

When sulphuric acid is not needed, the process of calcination may be much facilitated, by introducing a much larger quantity of air, which will be an advantage to the smelters.

The inventor also proposes to use a portion of heated oxygenated air at times, to assist the calcination of metallic ores.

[Condensed and selected from the "London Mechanics' Magazine."

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TO CORRESPONDENTS.

O. G., of Mich.—For steamers under a certain length, it would be a positive loss to apply more than two wheels; but steame s of a great length—double the length of our largest at present—may yet be built, and for them four wheels may be much better than two Much of the water-lift is due to the partial vacuum formed by paddle wheels as they revolve. We do not make models.

L F. H., of Vt.—The very same objection to the ordinary brake has been complained of before, and almost precisely the same remedy as you propose has been advanced, but we believe a patent was never issued upon it. We do not think you could obtain a patent.

J. N., of Ohio—Your specification came to hand properly executed, with the necessary fees to pay for an engraving, which will appear in a week or two.

T D. L., of Tenn.—Much obliged to you for the subscribers you sent us, but are sorry to inform you that we have not a copy of Prof. Silliman's speech with which to furnish you.

J. C., of Va —Car wheels have been constructed with an axle for each wheel; they have been illustrated in our back volumes; they do more harm than good, as each wheel seeks to move independently on a straight line. Water engines are now in use in some places. The quick motion of the valves can be obtained by cams; the old tappet motion (by levers) worked valves as suddenly or slowly as was desired.

G W. L, of Va.—The prussiate of potash is the substance employed for case-hardening. The journals, however, will oxydize afterwards if exposed to moisture and the atmosphere,

W. F., of Mass.—An electro-magnetic engine is not strictly self-acting, as you require a battery for the electro-magnets. Many machines of the same character, but not of the same form, have been presented to us, and some have been patented. Yours affords no ground on which to base a good claim for a patent.

T. J. H., of Va.—The work you want is Morfitt's Applied Cnemistry, sold by H. C. Baird, of Philadelphia.

D. P. M., of O.—It is surprising that a man of your intelligence and mechanical ability should know no better than to spend your time and money in so fallacious a scheme as trying to invent perpetual motion.

D. D., of N. C.—The pressure on the piston is generally about one pound less than that on the safety valve, when the steam pipe is well covered and the throttle valve full open.

M. T., of Phila.—There would be more lost than saved by your second paddle-wheel.

Money received on account of Patent Office business for the week ending Saturday, Aug 6:—

T. D., of Ala., $20; W. P., of L I, $30; D. E. McD, of Mass, $50; C. H. W., of Ohio $20: H F. B, of ——, $55; D. D., of N. Y., $14; S. T. J., of N. Y, $80: T. T J, of Pa., $25; S. B. D., of Mich., $30; D B. M., of N Y., $27; J. B. E, of N. Y., $55; S. M., of Ill., $20; W. T. M., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday Aug 6:—

S. B. D., of Mich.; N. E. P., of Ill.; T. T. J., of Pa.; D. D., of N. Y.; J. N., of Ohio; W. T. M., of N. Y.

A Chapter of Suggestions, &c.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

PATENT LAWS, AND GUIDE TO INVENTORS.—We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:—Of Volumes 1, 2 3 and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1?5. Of Volume 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7 all; price in sheets, $2; bound, $2,75. Of Vol. 8, all the back numbers subsequent to No. 27, but none previous.

PATENT CLAIMS—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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Foreign and American Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York

UNITED STATES PATENT OFFICE,
Washington, ulv 28. 18?3

ON THE PETITION OF JOHN H TIMS, of Newark, N. J., praying for the extension of a patent granted to him on the 31st day of October, 1839; for an improvement in bearings and oil boxes for railroad cars, &c., for seven years from the expiration of said patent, which take place on the 31st day of October, 1853.

It is ordered that the said petition be heard at the Patent Office on Monday, the 3rd of October next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Evening Post, New York; Boston Post, Boston, Mass., and Inquirer, Cincinnati, Ohio, once a week for three successive weeks previous to the third day of October next, the day of hearing CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 48 3

HELVETIA AND LAFAYETTE GOLD MINING Company, located at Grass Valley, California, (organized July 7, 1852), is now in the full tide of successful operation; its veins are opened, being worked and highly productive: its mill is of great power, complete in all respects, and now working with the most satisfactory results, and its prospects for future success, founded upon actual experience, are of an unusually flattering nature. There was taken out previous to Dec. 20, 1852, upwards of $169,000, and the yield of the mine is steadily increasing with each successive report. Dividends payable quarterly in October, January, April, and July, at the office of the Company, in Grass Valley, and at the Agency Office in New York A few shares and copies of the charter and by-laws, together with further particulars, may be obtained upon application to DANIEL ADEE, Agent,
48 3* No 107 Fulton st, New York.

FURNACE AND MACHINE SHOP FOR SALE—A first class Furnace and Machine Shop, with or without stock on hand; has done a business of about $15 000 per year for the last two years, which can be increased; situated in one of the best business towns in Central New York, on a railroad and canal. The owner having been in the business more than twenty years, wishes to withdraw from it Terms liberal For further particulars apply to JAMES FREELAND, Esq., of the firm of Freeland, Stuart & Co., 21 Park Row, New York City. 48 4

PORTABLE STEAM ENGINES—The subscriber is now prepared to supply excellent Portable Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, say 1, 2, 2 1-2, 3, 4, 6, 8, and 10 horse-power, suitable for printers, carpenters, farmers, planters, &c, they can be used with wood, bituminous, or hard coal; a 2 1-2 horse engine can be seen in store, it occupies a space 5 feet by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. S. C. HILLS,
27eotf Machinery Agent, 12 Platt st, N. Y.

A PARTNER WANTED—With a capital of 2 or $3000, to go into a new machine business for hewing ship timber in any shape or size. Measures have been taken to secure a patent. Address "J. E. C.," Salem, Mass. 47 2*

MORTISING MACHINE—"Dear Sirs, I received the Portable Mortising Machine about three weeks ago; I have used it, and am very well pleased with it; it is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
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"Since I have been a subscriber to your paper I have purchased one of your Mortising Machines, for which I would not take double its price and do without it. WM M. FLEMING,
Elizabethtown, Tenn., Jan. 8 1853."

This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
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1852 TO 1856.—WOODWORTH'S PATENT Planing, Tongueing, Grooving Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $76 For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1amtf

LAWRENCE SCIENTIFIC SCHOOL, Harvard University, Cambridge, Mass. The next term of this institution will open on the first day of Sept., 1853, and continue 20 weeks Instruction by recitations, lectures and practical exercises, according to the nature of the study, will be given in Astronomy, by Messrs Bond; Botany, by Prof Gray; Chemistry, Analytical and Practical, by Prof Horsford; Comparative Anatomy and Physiology, by Prof Wyman, Engineering, by Prof. Eustis; Mathematics, by Prof Pierce; Mineralogy, by Prof. Cooke; Physics, by Prof. Lovering; Zoology and Geology, by Prof. Agassiz For further information concerning the School, application may be made to Prof E N Horsford, Dean of the Faculty
Cambridge, Mass, July 15, 1853. 44 8*

PALMER'S PATENT LEG—Manufactured by Palmer & Co, at No 5 Burt's Block, Springfield, Mass., for New England and New York State, and 376 Chesnut st, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London, 1851 in competition with thirty other varieties of artificial legs (by the best artists in London and Paris,) it received the Prize Medal as the best. 47 10*

FOUNDRY FOR SALE—In the village of Westerly, R. I; location unsurpassed Sales of castings, for the past 6 months over $ 4 000. Apply soon (post paid) to C. POTTER, Jr., Agent, Westerly, R.I. 47 4*

COTTON MACHINERY—For sale, very low, viz 1 30 inch batt card, 1 warper, 2 dresser fans, and 1 iron boiler. Apply to E WHITNEY, New Haven, Ct. 45 6

IMPROVED CHUCK.—We, the undersigned, being engaged in the manufacture of an Improved Universal Screw Chuck, so arranged as to work the jaws together or separately with other conveniences, are now prepared to attend to orders at short notice The securing of a patent is anticipated E. B. WHITE & CO, Nashua, N. H. 43 6*

NORRIS WORKS, Norristown, Pa The subscribers build and send to any part of the United States, Pumping, Hoisting, Stamping and Portable Engines, and Mining Machinery of every description THOMAS, CORSON & WEST. 40 1y.

AMERICAN PIG IRON—Of the brands Wm. Penn, Swede, Amenia, Durham, Allentown, Sterling, Crane, and Mount Hope—also Scotch Pig Iron of favorite brands constantly on hand and for sale by G. O. ROBERTSON, 135 Water street, cor. of Pine. 43 8*

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongueing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass.,
39 20* N. G. NORCROSS.

ANDREWS & JESSUP—No. 70 Pine street New York, Commission Merchants for the sale of all kinds of Cotton and Woolen Machinery, Machinists' Tools, Belting, &c. Importers and dealers in every variety of manufacturers' articles. 43tf

GARDINER'S PATENT MAGNETIC GOLD Washer, Amalgamator and Separator.—This is the most perfect machine for Gold Mining that has been invented; it performs the operation of washing the earth or pulverized quartz rock, amalgamating and magnetic separation of black sand or oxyde of iron, all at one movement, saving every particle of gold dust, however minute. With this machine two men can perform as much work per day as ten by any other process, and save all the gold A full explanation of its operation will be given by the manufacturer. The public are invited to examine Price $250. Iron Retorts at wholesale and retail.
NORTON & GARDINER,
40tf 47 Dey street, N. Y.

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing. Faber's Water Gauge. Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc etc.
CHARLES W. COPELAND,
29 26* Consulting Engineer, 64 Broadway.

PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

WHEELER, WILSON, & Co.—Watertown, Ct., proprietors and manufacturers of Allen B. Wilson's Patent Stitching Machine. Patented June 15, 1852, it can be seen at the Company's Office 265 Broadway, New York. 30 20*

ATMOSPHERIC TELEGRAPH—The English patent (just issued) is now offered for sale at the Company's office, 24 Merchant's Exchange, Boston, Mass. I. S. RICHARDSON,
35tf Agent A. T. Company.

KRUPP'S (London Council Medal 1851) CELEBRATED CAST STEEL—Of any dimensions warranted superior to any other for Platers and other Rollers requiring hardening; also for hydraulic and other pistons, railway axles, and shafts for steam engines, &c &c. This cast steel admits of welding without borax with the same facility as iron. THOS. PROSSER & SON, 28 Platt street, New York. 39tf

McALLISTER & BROTHER—Opticians and dealers in mathematical instruments, 48 Chesnut st, Philadelphia Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales Tape Measures, Salometers, Spy Glasses, Microscopes, Hydrometers, &c. &c. An illustrated and priced catalogue will be sent by mail free of charge. 39 6m*

A GOOD CHANCE FOR MANUFACTURING—A Water Privilege of ten feet fall, on a never-failing stream, with four acres of choice land, in the town of Cornwall, Orange Co, N. Y., 5 miles from the North River, and three miles from the railroad depot, and on the line of survey of the Albany and Hoboken RR. For particulars inquire of John J. Vanduzer, 184 Canal st, N. Y., or John Orr, on the premises. 40 13*

NEW METHOD FOR MAKING WROUGHT-Iron direct from the Ore—The proprietors of James Kenton's Patent, who have purchased Alex. Dickerson's patent for the above purpose, are desirous of introducing the invention into general use, and invite parties who may wish to negotiate for rights for States and counties, or for furnaces, to make immediate application, and to examine the furnace which is in successful operation at the American Iron Company's Works, Newark, N. J. The invention is exciting considerable interest; gentlemen from all parts of the country, who are engaged in the manufacture of iron, have examined the furnace in its workings, and give it their decided commendation. A circular, giving more minute information, will be sent to those desiring it. The rights for several States and counties have already been disposed of. Applications for rights in the State of New Jersey may address the Hon. J. M. Quinby, President of the American Iron Company. Inquiries or applications for other States may be made to A H. BROWN, Newark, N. J, Office 107 Market st. 34tf

BEARDSLEE'S PATENT PLANING Tongueing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany.
15tf

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 40tf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
40tf P. A. LEONARD.

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27tf Painters and Chemists.

LOGAN VAIL & CO., No. 9 Gold st, New York—Agency for Geo. Vail & Co., Speedwell Iron Works, Norristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand drills, Tyre Benders, and shafting and machinery generally.
38 1y

E. A. BOURRY & H. E. ROEDER—Consulting and Mechanical Engineers; Office No. 333 Broadway, New York City. 43 9*

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.
For machines or territorial rights, apply to C B. HUTCHINSON & CO., Syracuse, N. Y. 36tf

J. D. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Screw Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE,
27tf Windsor Locks, Conn.

CIRCULAR SAW MILLS—The undersigned are manufacturing, and keep constantly on hand, "Child'z Premium Double and Single Circular Sawing Machines" The best machines in use for sawing lumber from logs of all sizes, and warranted capable of cutting more lumber in a given time than any other mill Shafting, gearing, and all other mill work, made to order, with dispatch and in a workmanlike manner. H. WELLS & Co
Florence, Hampshire Co., Mass. 44 6*

THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N.H. M. Co., 12 Platt st, N. Y. 28tf.

LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati, O. 27 6m*

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SCIENTIFIC MUSEUM.

Receipts for Dyeing.

A few receipts for dyeing on a small scale will be found very serviceable, especially when regular dyers are not at hand. The articles for the respective colors are merely given, as the depth of shade must be at the discretion of the operator.

LILAC—Archil, a root to be bought at the druggists. The color, which is very powerful, is extracted in boiling.

NANKEEN—Boil equal quantities of Spanish arnatto and pearlash in water till dissolved.

BLUE—Indigo is generally used; but, as its preparation is not so simple as others, it will be better to purchase a bottle of blue dye.

YELLOW—Fustic chips, weld or dyer's weed tumeric, or Dutch pink.

GREEN—May be produced by mixing the requisite portion of blue with either of the preceding.

RED—Archil, madder, cochineal, and Brazil Wood are employed to give silk a bloom, else it is only used by itself when lilac is wanted.

SCARLET—Silk cannot be dyed a full scarlet; but a color approaching it may be given to silk by first dyeing it in crimson, then dyeing it with carthamus, and lastly, yellow, without heat.

BLACK—Logwood and green copperas are commonly used; but the color is improved by first boiling the article in a decoction of galls and alderbark. If previously dyed blue or brown, by means of walnut peels, it will be still better.

[The above receipts are from the "Baltimore Sun," which would not publish them unless it believed that it was conferring a benefit upon its readers; but unless the receipts are correct, they will assuredly do evil. They are not correct—but then such receipts are very common, and to be found in books professedly correct, and are calculated thereby to deceive the editors of our best newspapers who are not practical chemists. Let us explain and correct the above receipts.

ARCHIL—This substance will dye a lilac on silk; but not on cotton. It is not prepared as above—it is a litchen, and is steeped in urine and lime-water for a month before it is fit to be used. A patent was granted on the 15th of June, 1852, to Leon Jarossons, of this city, for manufacturing archil. The color which it makes is beautiful, but will only stand exposure to the sun a very short time—it is one of the *fugitive* colors.

NANKEEN—This is the name of the color; it is a peculiar buff. The way to make it is described correctly above, but as in the lilac receipt, the mode of dyeing the goods is not given. Annato dyes a poor fugitive but beautiful color, and should never be used for that purpose, on any goods to be exposed to the sun, air, or that require washing. It dyes cotton and silk a buff, salmon, and orange. Acids redden it, alkalies strip off the color.

BLUE—The bottle of blue dye spoken of must mean the extraat of indigo, or the sulphate of indigo, neither of which will dye cotton. The urine blue vat, in the old farm houses for dyeing wool, is the only safe process for inexperts to try.

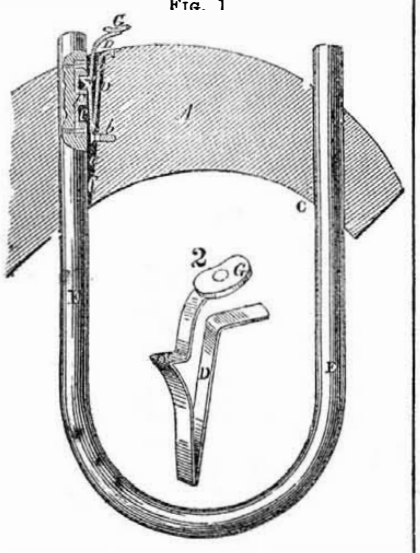
GREEN.—The fustic and blue spoken of above, will dye silk and wool, the former hot, the latter by boiling, the blue must be the sulphate of indigo. Yellow on cotton is dyed with the bichromate of potash, and the acetate, or nitrate of lead; or with yellow oak bark, and the sulpho-chloride of tin.

RED—The receipt for red, above, does not tell how a red can be dyed on any kind of goods, for none of the substances mentioned will dye a red, without the use of a mordant madder, lac, cochineal, and Brazil wood, are used for dyeing red; cochineal will not dye a red on cotton, but it makes the most brilliant scarlet of any substance known, on silk and woolen goods. The chloride of tin and the cream of tartar are the mordants. It is a simple dye. Every good farmer's wife knows how to dye madder red. The mordant, used, is alum, with a little *argil* (impure tartar). It is not used for silks, only cotton and wool. The goods, must be well washed, out of the alum liquor, before they are put through the madder bath.

BLACK—Let no person boil woolen goods in galls or alderbark prior to the logwood dye; a very small quantity of galls is useful, but if too much are used the goods acquire a brown color. Cotton cannot be dyed a good black without being prepared with sumac, but woolen goods are dyed black by boiling them one hour first in a kettle containing some bichromate of potash, about two ounces to the pound of goods, then airing them, washing, and boiling in logwood, one pound at the rate of 5 oz. to the pound; or copperas can be used for the bichromate of potash, and is the old way, only a little fustic must be employed, or the color will not be a jet but a blue black.

New Ox Yoke Fastener.

FIG. 1



The annexed engravings are views of an improvement for a new plan of fastening the bows in ox yokes, invented by Messrs. True & Morrell, of Hampton Falls, N. H., who have taken measures to secure a patent.

Fig. 1 is a vertical section, showing how one of the bows is secured by a spring in the hole of the yoke-beam, and figure 2 is a view of the spring which fastens the bow. The same letters refer to like parts.

A is the yoke-beam (a part of it only is shown); it is made in the common manner. E is the bow, it is formed like those in common use, with the exception of a part near the inside end, having a notch made in it in which a plate of metal, F, is secured by screws or otherwise; this plate has two recesses or notches, *c*, made in it. The bow is represented as being inserted in the yoke-beam, A, and secured in its place by a bent steel spring, D. The inner bow-hole, C, is wider than the outer one,—*a a* showing the enlargement to allow the spring to act. This spring is secured by a screw at the top of the beam, and a screw, *b*, at its lower bend, supports it in its place. D′ is a projection on the spring which fits into the recess, *c*, in the metal plate, F, of the bow. G is a catch on the end of the spring.

OPERATION—By taking hold of the catch, G, of the spring, and pulling it towards *a*, the projection, D′, is then drawn of the recess, *c*, in the bow, to allow it (the bow) to be pulled out; the spring, on being released, immediately springs back. To insert the bow, the spring is drawn to the one side, in the same manner as the bow is released, and then it (the bow) is pushed up into the holes of yoke beam A, either with the lower or upper recess, *c*, as may be desired opposite the projection, D′, of the spring. By releasing the spring from pressure on catch, G, the projection, D′, springs into the recess, *c*, and keys the bow to the yoke beam. In a certain sense it may be called a self-keying yoke, and is a good improvement over the eye and loose wedge key, for fastening the bow to the beam in yoking up.

More information may be obtained by letter addressed to the inventors.

Studying the Weather.

In Lloyd's Rooms, at London, there is a curious weather gauge. It is an index turned by the vane on the roof, constantly showing by the vane below the direction of the wind, while a pencil is attached to a chart, and moved by the same power, so as to mark the precise course in which the wind has been blowing for days; making a record as distinct as the pencilled course of a ship on the master's chart at sea Studying this map of the winds, an insurer may make some calculation upon the progress of a vessel, and shape his business accordingly.

The Coach Rattle Avoided.

An intelligent contributor furnishes "The Boston Transcript" with the following account of an improvement which is soon to be introduced for public favor. He says:—

"To prevent the noise and din of omnibuses and other carriages on their way through the streets, has long been a great desideratum; and the public will be rejoiced to be informed that a mode to accomplish so important an object has at length been obtained. The improvement is said to have emanated from a practical engineer, and to be applicable to all sorts of vehicles for the common roads. By a proper arrangement and connection of the doors and windows, on the part of the manufacturer, the shaking and rattle generally so peculiar to them may readily be avoided.—But to get rid of the sound of the wheels, as they strike against the pavement, has hitherto been considered almost an impossibility. This, we learn, may now be accomplished in the most simple and effective manner. All that is necessary is merely to cover the rims with india-rubber tires, of from an inch to an inch and a half in thickness, according to circumstances. At first it was thought that the india-rubber would lack strength and durability; but, being expressly prepared for the purpose, it is asserted that it will endure a long time."—[Exc.

[We have seen the above in a great number of our exchanges within a few weeks. This invention was described in Vol. 3, Scientific American. The india rubber cannot wear as long as iron tires, but it may be an improvement to line between the felloes and tires with india-rubber.

Tomato Figs.

As the time for preserving tomatoes is at hand, the following receipt may be useful to many of our readers. It was received by the Directors of the South Carolina Institute from Mrs. Johnson, to whom a premium was awarded at the last Fair for tomato figs:—Put three pounds of clarified brown sugar to every five pounds of tomatoes. They must be first scalded to remove the skin, then place in a stone jar tomatoes and sugar alternately, to extract the juice; in twenty-four hours boil them in their own juice until the sugar penetrates and they look clear, but not so much as to mash them. Very little boiling is necessary. Return them to the jar to remain two days, when you must pour off the syrup; boil it and throw over them. Let them remain two days, and then shake them from the syrup, and dry on dishes, turning them every day for a week of good drying weather in the sun. Should the weather be damp after the boiling is finished, they can remain in the syrup until good weather. When perfectly dry, pack down in small wooden boxes, treating each layer to sifted loaf sugar.

Sleep and the Senses.

According to M. Cabinis, a French physiogist, the muscles of the legs and arms lose their power before those which support the head; and these last sooner than the muscles which sustain the back; and he illustrates this by the cases of persons who sleep on horseback, or while they are standing or walking. He conceives that the sense of sight sleeps first, then the sense of taste, next the sense of smell, next that of hearing, and lastly that of touch. He maintains also, that the viscera fall asleep, one after another, and sleep with different degrees of soundness.

LITERARY NOTICES.

ILLUSTRATED NEWS—ENLARGED—We are happy to find our neighbors of the "Illustrated News" are prospering so well as to afford to increase the size of their journal to double its former dimensions. Interesting events are transpiring so frequently lately that the publishers of the "News" find they cannot give a view of all the interesting scenes daily occurring, without enlarging their sheet, and they have very generously adopted a size of just double its former dimensions. The various subjects of interest brought to our "Crystal Palace" will occupy a very prominent space in the "News," and we predict for it a circulation unsurpassed by any weekly journal published in the world. This week's numbers contains views of Plymouth and the Pilgrim Jubilee which came off there on the 1st inst. H D. Beach, publisher, 130 Fulton st, New York.

LITERARY MUSEUM—This is a paper devoted strictly to literature, as its title indicates, and a better family paper is seldom met with; the stories it contains are well written and less objectionable than the stories published in most other literary papers To say it is the best literary family paper published in the United States, might be doing injustice to such literary papers of high merit as "M'Makin's Model Courier," "The American Union," and other papers of high standing, but we may say that the "Museum" compares favorably with any literary paper published in the world. Ossian E. Dodge, publisher, 12 School st, Boston, Mass Terms $2 per annum.

PUTNAM'S MONTHLY—The August number of this sterling magazine we find upon our table, teeming with the choicest literary matter as usual. G. P. Putnum publisher, 10 Park Place, N. Y.

SHIPBUILDER'S MANUAL—Number 7 of this useful work is now published, and can be obtained at Adriance, Sherman & Co., No. 2 Astor House, this city.

MECHANICS, INVENTORS, AND MANUFACTURERS.

SPLENDID PRIZES!

The first number of the Ninth Volume of the SCIENTIFIC AMERICAN will be issued on the 17th of September. We are grateful for the very liberal encouragement which we have received from our readers, and take this occasion to express to them our gratitude. We are also under many obligations to our cotemporaries for favorable notices.

The next volume will be commenced with new and beautiful type, printed on paper manufactured expressly for this publication, of greatly increased weight and finer quality: this item alone will increase our yearly expenses over $3000; in addition to this we shall increase our present able Editorial force as it is our intention to continue the Scientific American, "the leading and most reliable practical scientific journal in the United States" It will continue the unflinching advocate of all useful improvements, and it will fearlessly expose all unreliable and deceptive schemes appertaining to its character; [in this respect it has gained a reputation superior to any other work of the kind in the world]

The opening of the Crystal Palace in this city forms an object of rare public interest; we shall devote a full page of the paper every week to careful criticisms, reviews, and illustrations of the objects most worthy of attention. We hope to render this department especially interesting to all our readers, whether they visit the Fair or not. The copious and finely executed engravings of machinery, new inventions, etc.—the four hundred pages of valuable scientific and practical reading—the useful receipts—the full report of all the Patent Claims, and the reliable character of the journal on all branches within its field of labor—render it worthy of the support which it has so liberally received from its intelligent class of readers.

The circulation of the Scientific American during the present volume has exceeded 18,000 copies per week. The edition on the new volume will be commenced with 23,000, which we feel confident will not be an over calculation. Subscribers, to ensure the numbers from the commencement of the volume, should send in their subscriptions early, as many were disappointed in not obtaining the complete set of the present volume.

The Scientific American is in form suitable for binding, and each volume is accompanied with a full index of all the subjects, which renders it an Encyclopedia of Useful, Scientific, and Mechanical Information for present as well as future reference.

Hoping to stimulate our readers to greater activity in spreading the circulation of the Scientific American, we offer the following Splendid Prizes for the largest list of mail subscribers sent in by the first of January next.—

$100 will be given	for the largest list.
$75	for the second largest list.
$50	for the third ditto.
$45	for the fourth ditto.
$40	for the fifth ditto.
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$25	for the eighth ditto.
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The cash will be paid to the order of the successful competitors, immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

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